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UBERCULIN REACTION IN CHILDREN WITH A GHON COMPLEX

REVIEW OF ONE HUNDRED AND TWELVE CASES

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ysicians have been accustomed to thinking once a person has a positive reaction to culin he will remain a reactor for the rest s life. However, recently a succession of nts who had Ghon tubercles in the paren- a of the lungs and calcified hilar nodes d negatively to both the first and the second ntrations of purified protein derivative. nuch as a positive reaction to tuberculin ieved to indicate a sensitivity produced by tubercle bacilli in the tissues, it would that if the reaction became negative on ted tests this result would indicate that bacteria no longer existed in the tissues, least, that the tubercle bacilli were so com- walled off that none of the antigen was ble to induce the formation of antibodies. hermore, this observation emphasized the hat as an increasing number of persons e only minimal infections with the tubercle and are completely desensitized on the off of the tubercle bacilli these infections be missed in the usual tuberculin testing community.

MATERIAL AND METHOD

hundred and twelve children with a Ghon com- the lungs were studied. The ages of the pa- varied from 3 to 15 years; the largest group of s was in the age group of 12 and 13 years. were 7 children less than 6 years of age. Of 12 patients, 63 (56.3 per cent) were boys and 49 per cent) were girls. According to Gass and tes,[1] Ghon tubercles occur with about equal fre- in the two sexes.

ntgenograms showed the characteristic sign of hon tubercle; that is, the small, rounded, irreg- egion in the parenchyma of the lung and the d hilar nodes. Occasionally several calcifica- were found in the periphery of the lungs.

uberculin test was performed at the same time e roentgenograms were taken. The first tuber- test was performed with use of 0.00002 mg. of rified protein derivative (P.P.D.) per 0.1 cc.; the second strength contained 0.005 mg. The reactions were read at the end of twenty-four hours, and the children were classified as reactors, doubtful reactors or nonreactors. If the reaction was doubtful, the reading was made at the end of forty-eight hours.

RESULTS

The age and sex distribution of reactors and nonreactors are shown in the table. Among the children less than 12 years of age the reactors outnumbered the nonreactors, but in the two age groups of 12 and 13 years and of 14 and 15 years the nonreactors outnumbered the reactors.

Of the 20 patients (17.8 per cent) for whom there was a history of exposure to tuberculosis, 15 (75 per cent) reacted to the first strength P. P. D. In the 7 patients who had tuberculous lesions in addition to the Gohn complex, positive reactions with first strength P. P. D. were obtained.

Age and Sex Distribution of Reactors and Nonreactors to Purified Protein Derivative

	Sex		Age, Years					
	Male	Female	Less Than 6	6 and 7	8 and 9	10 and 11	12 and 13	14 and 15
Total numbers of patients tested.....	63	49	7	15	19	20	33	18
Reactors to first strength (0.00002 mg. P. P. D. per 0.1 cc.)..	34	23	4	7	11	13	15	7
Nonreactors.....	29	26	3	8	8	7	18	11
Reactors to second strength (0.005 mg. P. P. D. per 0.1 cc.)..	5	6	..	1	2	1	5	2
Nonreactors.....	7	5	1	1	3	2	3	2

The geographic distribution of 104 of the 112 patients is shown in figure 1. The remaining 8 patients were from foreign countries. This distribution corresponds in general to that of all patients coming to the Mayo Clinic. The patients who have calcified lesions, therefore, are not restricted to a particular area in which the people are predisposed for one reason or another to calcified lesions.

Of the 112 patients as a whole, a reaction to the first strength P. P. D. was recorded for 57 (50.9 per cent) and no reaction was recorded

Gass, R. S.; Harrison, E. F.; Puffer, R. R.; rt, H. C., and Williams, W. C.: Pulmonary Cal- on and Tuberculin Sensitivity Among Children lliamson County, Tennessee, Am. Rev. Tuberc. 9-387 (April) 1943.

for 55 (49.1 per cent). A deviation as large as this from the expected 100 per cent positive reactions cannot be accounted for by an error of random sampling.

The second strength P. P. D. was applied to 23 of the 55 nonreactors; of these, 11 (47 per cent of 23) had a positive reaction and (52.2 per cent) a negative reaction. In o

Fig. 1.—Geographic distribution of 104 children who had a Ghon complex.

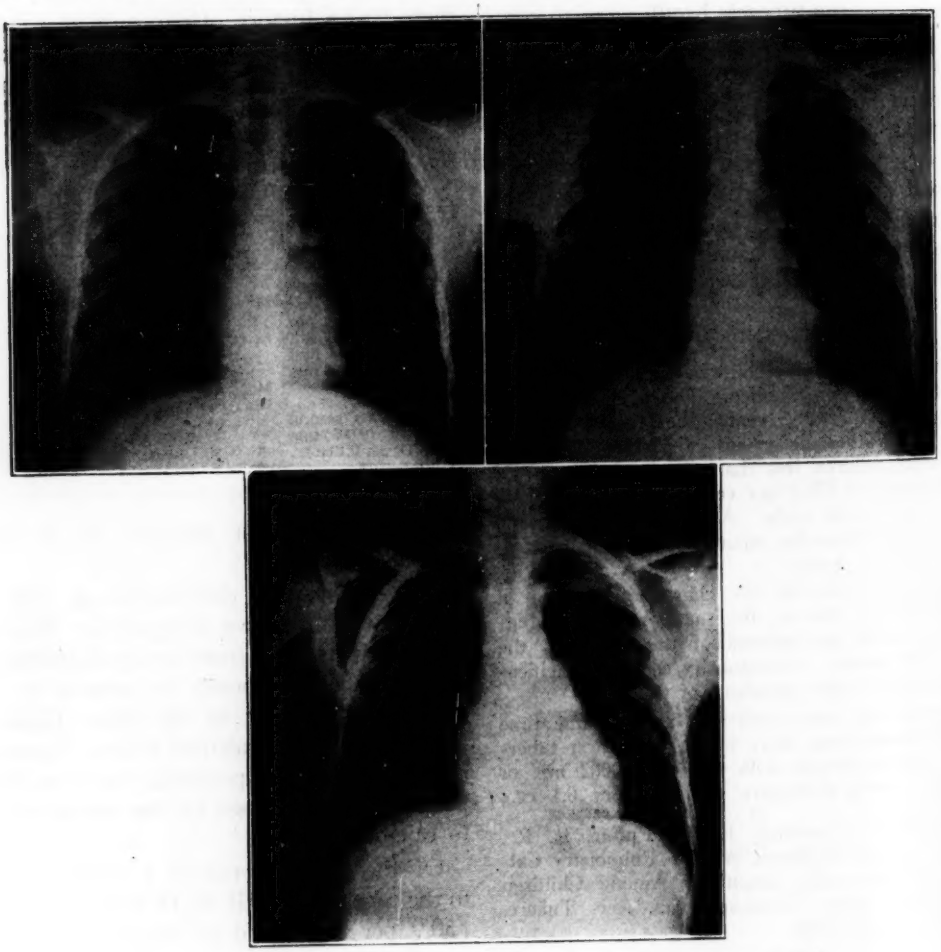

Fig. 2.—Roentgenograms of 3 nonreactors to second strength P.P.D.

ries a higher percentage of negative reactors as found to the second strength P. P. D. than s been reported elsewhere. This can probly be accounted for by the generally better gienic conditions of the home environment in hich patients of private institutions live and the geographic distribution.

Roentgenograms of 3 of the nonreactors to the cond strength P. P. D. are shown in figure 2.

The group of patients in this series in whom e spread of the tuberculous process had passed yond the primary complex is small, and in ne of them was a negative reaction to tuberlin found. This represents a group in which e resistance of the person or the size of the fecting dose of tubercle bacilli was so great at during the primary infection bacteria spread yond the Gohn tubercle and the bronchocheal nodes.

COMMENT

A review of the literature showed a considerle variation in the percentage of children with Ghon complex who had a positive reaction tuberculin. Barnard, Amberson and Loew [2] und that of 184 patients between the ages of and 15 years who had positive roentgenologic idence of tuberculosis only 7.1 per cent failed react to 1 mg. of old tuberculin. Wells and nith,[3] in a similar study, obtained negative actions in only 55 per cent of 128 patients. ss and others [4] found little association in 3 cases between the tuberculin reaction and e calcified lesions in the parenchyma of lung d the tracheobronchial nodes.

The study of Lloyd and MacPherson [5] showed at of 203 healthy normal children in whom sitive reactions had been obtained, 2 per cent d a change from a positive to a negative reacn after a two year interval. Aronson and nnenberg [6] reported that after a five year erval the reactions of 9 per cent of 86 patients th initial positive reactions had become negative. The loss of sensitivity to tuberculosis found for this group of cases, as represented by roentgenologic evidence of a Ghon tubercle and a previous positive tuberculin reaction, indicates that this is not of infrequent occurrence. It is, however, no indication of waning immunity to tuberculosis, as has been shown by Willis [7] for animals and by Sewall, de Savitsch and Butler [8] for human beings.

In human beings, therefore, not only is a negative reaction to tuberculin no evidence that the person has never been infected but also it is no proof that acquired resistance is lacking, as stated by Rich.[9] With an increase in minimal tuberculous infection and the complete healing of primary tuberculosis, the person may fail to react to tuberculin. This seems possible in view of the findings of Feldman and Helmholz [10] that Ghon tubercles from a child 20 months of age were negative for tubercle bacilli when an emulsion of the tubercles was injected into guinea pigs. Whether such persons again may respond to a tuberculous infection with a primary complex, as apparently occurred in some of the cases presented by Terplan,[11] must be determined by study of a larger series.

SUMMARY

Sensitivity to tuberculin is not influenced by sex. It was absent in practically half of 112 children when an injection of 0.00002 mg. of purified protein derivative per 0.1 cc. was given. An adequate sample of those who did not react to the first strength tuberculin were tested with 0.005 mg. of P. P. D. A little less than half of those who composed this sample failed to react. A regression in the sensitivity to tuberculin does take place in the continued presence of a Ghon complex unless there is a focus of living tubercle bacilli.

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INFANTILE DWARFISM (ENCEPHALOMYELITIS) IN SIBLINGS

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This is a study of the case of 2 sisters, R. L. and L. L., who failed to grow after the age of 3 months. One of the children lived until 2½ years of age, and the other is still living at 7 years. These cases should be of special interest to pediatricians, for, of all branches of medicine, pediatrics is the one which concerns itself with growth and development. In every-day practice the physician looks on his infant patients with pride, as they gain an ounce a day, double and triple their birth weight, sit, stand and later walk and talk, in keeping with the normal physiologic process of growth and development. These siblings defied the laws of nature and remained, both in growth and in development, at practically the same stage as at birth.

A study of these unusual sisters reveals a combination of factors which may explain their arrested development. The first of these is the inherited familial background, or the constitutional factor.

The children were conceived by Italian parents who were first cousins. The mother had fifteen pregnancies, of which eight ended in miscarriages. From the seven pregnancies which came to term there were 5 normal children and 2 infantile dwarfs. Of the normal children, the oldest is 22 and the youngest is 10 years of age. In describing the normal children, the mother said that they had the usual childhood diseases and colds and that they were underweight. The mother has hypertension. The father is alive and well.

Previous to the birth of R. L., the elder of the two infantile dwarfs, the mother had three miscarriages. Her pregnancy in this instance was uneventful except for occasional bouts of epistaxis. Labor was short and spontaneous; the child was delivered by a physician at home, and a forceps was not used. There were no postnatal complications. The birthweight was approximately 7½ pounds (3,400 Gm.). The infant was born in August 1935, and is now 7 years and 5 months old. She was breast fed but took the feedings poorly. At 3 months she began to have convulsions, which consisted of twitching movements of the upper extremities and staring of the eyes into space. The convulsions lasted a few minutes. There were frequent recurrences in the months that followed.

The mother, having noted the vegetative condition of R. L. and her increasing blindness, sought medical aid in various clinics, without relief for the child. Finally, in April 1940, when R. L. was 5 years old she was admitted to Cumberland Hospital, Brooklyn.

The child presents a peculiar dwarfish appearance with a contrast in size of face and body. Her attitude is one of flexion. It is almost a fixed posture. All the joints are flexed and kept in a spastic condition. When passively extended, the joints automatically return to a position of flexion. As regards size, the limbs, trunk and head are in good proportion. The patient's weight since admission has varied between 5½ pounds (2.4 Kg.) and 8 pounds 2 ounces (3.7 Kg.). The latter is her present weight.

Fig. 1 (case 1).—Normal position of the patient. The ruler indicates the comparative length of the child.

Some of her measurements are as follows: circumference of skull, 13¼ inches (33.7 cm.); circumference of chest, 14½ inches (36.8 cm.); circumference of arm, 4½ inches (11.4 cm.), and total length, 24 inches (61 cm.).

All these measurements correspond to those of a month old infant. There is prominent dorsal kyphosis. The skin on the child's limbs is covered by a growth of hair such as might be seen on the limbs of an adolescent. The skin on her feet has a reddish appearance which suggests acrocyanosis. Muscle tone is poor. The head has a microcephalic appearance and is covered with an abundance of hair. The fontanels are closed. The face presents a mouselike appearance, having a prominent pointed nose, long eyelashes, heavy eyebrows, prominent incisor teeth and a receding chin. The teeth are mostly deciduous and indicate a generalized hypoplasia and attrition. The 6 year molars have not appeared. The eyes are comparatively large. The pupils are equal and react well to light. Pronounced nystagmus is present. The infant's vision is limited to perception of light. Examination of the fundi reveals normal blood vessels and primary atrophy of the optic nerve. Hearing is present. Reflexes are elicited

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th difficulty because of the spastic condition of the bs. Knee and ankle jerks could not be elicited. dominal reflexes are absent. The Babinski sign is itive and bilateral. Only deep cutaneous sensation present. The heart is not enlarged, and the sounds e of good quality. The lungs are clear to percussion d auscultation. Examination of the abdomen reveals to be of scaphoid type. The spleen, liver and kidys could not be palpated. The lower extremities are ssed.

The following laboratory studies were performed: Determinations of blood chemistry. The results wed 112 mg. of sugar per hundred cubic centimeters, mg. of urea nitrogen, 1,214 mg. of cholesterol, 5 mg. of sphorus and a phosphatase activity of 4.8 units. A complete blood count. It showed 12 Gm. of moglobin per hundred cubic centimeters, 4,500,000 cells and 10,000 white cells, of which 60 per cent re polymorphonuclears, 36 per cent lymphocytes, 3 cent monocytes and 1 per cent eosinophils. 3.

Fig. 2 (case 1).—Roentgenogram of the skeletal tem.

inalysis. Essentially normal conditions were revealed, h absence of phenylpyruvic acid. 4. Repeated Wasrmann tests. All elicited negative reactions.

A roentgenographic report by Dr. Koiransky, of mberland Hospital, contains the following data: The ly skeleton as revealed by roentgenogram shows a iety of stages of development, varying from two nths to eight years. All the bones of the skeleton e a ground glass appearance, with decided thinning the cortex and, therefore, a rather wide medullary ce.

The thickness of the bone of the skull is that of a ld approximately 2 years old. The fontanels are irely closed, and there is a moderate granular osteosis of the bones entering the formation of the varia. The most striking features are in the region the mastoids and of the middle ear. The semicirar canals can be made out. Usually they are not ualized beyond the age of 2 months. Peculiar features are noted in the development of the facial skeleton. There are prognathism of the maxilla and recession of the mandible. This recession of the mandible, however, is not similar to that seen in microcephalic persons, because the characteristic features of the microcephalus—namely, the diminution of the width and depth of the posterior and the middle fossa—are not found in this instance. The pituitary fossa is very small. The frontal sinuses are present. An encephalogram revealed that the ventricular system was irregular, with no ramshorn or butterfly arrangement. The ventricular system appeared to have been replaced by cystic areas in the midbrain. The development of the epiphysis of the head of the humerus is approximately that of an 8 year old child, but the development of the carpal region was not beyond that of a 2 year old child, as only three ossification centers are present. The epiphysial lines and the ossification centers of the knee joints, the ankle joints and the tarsal and metatarsal regions correspond to those of a 5 year old child. There was no patella.

The spine shows moderate kyphoscoliosis in the cervicodorsal region, with the maximum convexity directed toward the right and anteriorly. The development of the ribs seems to be entirely normal. The pulmonary fields show a decided accentuation of the pulmonary striation. Previous roentgenograms of the chest revealed an appearance which suggested lipid pneumonia. A recent study of the gastrointestinal tract revealed a triangular infantile type of stomach, with no differentiation between antral and pyloric portions.

Through arrangement with the Jewish Hospital of Brooklyn an electroencephalogram was recorded, and it was revealed that the child had very little cerebral activity. The electroencephalogram revealed a flat electrical pattern, with no potentials which could be considered of cerebral origin.

The course of the patient in the hospital has been uneventful for the most part. There have been several bouts of infections of the upper respiratory tract and of pneumonic infections, which responded to chemotherapy. The child lies in one position, her blind eyes blinking, and appears to be listening to what goes on about her. She responds to various stimuli. Her diet is limited to semisolid foods and gruels, which are swallowed without chewing. It requires from thirty to forty-five minutes to feed her. Her voice is limited to a shrill cry, which is heard particularly at night. When contented she is apt to smile. She is not strong or vigorous and is easily exhausted by much manipulation.

The younger sister, L. L., resembled R. L. in many ways and had a similar pediatric history. She had a normal spontaneous delivery and weighed 7 pounds (3,175 Gm.) at birth. Development seemed to progress normally until she was 3 months of age, when she stopped gaining weight. Frequent convulsions appeared. The parents thought that she was partly blind, but they believed that she was capable of hearing. At the time of admission to the hospital the child was 2 years of age, but she had never talked, held her head erect or sat up. L. L. had been breast fed up to 3 months. This was followed by formula feeding. Use of cod liver oil and orange juice was also started at 3 months and continued up to 1 year. The child was later fed whole milk and puréed vegetables. All her feedings were taken slowly.

Examination on admission, April 4, 1940, when the child was 2 years of age, revealed a scrawny white girl with a small, well developed face. The child weighed 7 pounds and 8 ounces (3,400 Gm). Only 8

ounces (227 Gm.) had been gained in two years. The attitude assumed by the child was unusual. The head was drawn back in opisthotonus position. The upper extremities were flexed, and the fists were tightly closed. The lower extremities were crossed. The tone of the mucles was spastic.

The head was covered with an abundance of fine, silky blond hair. The fontanels were closed. Examination of the eyes revealed that the pupils were slightly irregular and reacted poorly to light. The auricles were well formed. There was no discharge from the nose and no obstruction to breathing. There were seven teeth, four of which were fully erupted. The ribs were prominent, but there was no beading or flaring. The lungs were clear to percussion and auscultation. The apex beat was felt in the fourth intercostal space of the left side. The heart sounds were of fair quality; a short systolic murmur was heard at the apex but was not transmitted.

The abdomen was scaphoid and sunken. The overlying skin had numerous loose folds, indicating a loss of weight. There was no tenderness, and no masses were felt. The liver and spleen were not palpable. The external genitalia were normal. The fingers of both hands were tightly clenched, and the thumbs were held in the fists. The feet were kept in the equinovarus position. The skin covering the trunk was of poor turgor, particularly that over the abdomen, which was completely lacking in elasticity. Over the buttocks there were numerous superficial excoriations. The skin covering the hands was scaly and cyanotic in appearance.

No reflexes could be elicited in the upper extremities. The knee jerks were equal and hyperactive. The Babinski, Gordon and Chaddock reflexes could not be elicited. There was a pronounced spastic resistance to passive motion, but the child did have the ability to move her limbs voluntarily. The lower extremities were kept crossed. An apparently fixed dorsal kyphosis was present.

The results of laboratory examinations were as follows: hemoglobin content, 100 per cent; white blood cell count, 6,800, with 48 per cent polymorphonuclear leukocytes, 49 per cent lymphocytes and 3 per cent monocytes; blood sugar level, 21 mg. per hundred cubic centimeters; blood cholesterol level, 126.3 mg. The urine was essentially normal and contained no phenylpyruvic acid.

A roentgenogram of the bones showed a distinct ground glass appearance and osteoporosis.

The course in the hospital was uneventful except for several cyanotic spells. There were no convulsions. There was a superficial pyogenic dermatitis of the skin which responded to an ammoniated mercury ointment. On Dec. 22, 1940, the child died unexpectedly. She was then over 2½ years of age and had been in the hospital seven months. Permission for autopsy was obtained.

Observations at Autopsy.—General: The body was that of an extremely emaciated white girl, 55.5 cm. long. It presented the appearance of an aged dwarf. The hair was light brown and long. The skin was extremely wrinkled and loose; the panniculus adiposus was almost absent, and all the skeletal prominences were distinctly exaggerated. There was distinct pallor and extreme dehydration of the skin, mucous membranes and all internal structures.

Cavities: The pleural, pericardial and peritoneal cavities were normal.

Cardiovascular System: The heart and ascending aorta weighed 11 Gm. The epicardium, myocardium and endocardium were normal except for their gen pallor, flabby consistency and edema. The valves w normal. The foramen ovale was closed. The duc arteriosus was obliterated. The coronary sinuses vessels were normal. The aorta and other large arte were normal. The vena cava and other large veins w normal.

Respiratory System: The larynx and trachea w normal, and the bronchi were congested. An exami tion of the lungs showed the pleural surfaces to smooth and pink throughout. There were a few irr ular areas of congestion of the parenchyma, but m of the lung was well aerated. The intrapulmon vessels and bronchi were normal.

Microscopically, most of the parenchyma was e physematous. There were, however, a number of ar in which the bronchial walls showed a pronoun polymorphonuclear and plasma cell infiltration, w engorgement of blood vessels characteristic of an ac bronchitis. Some of these areas showed bronchopn monic consolidation of adjacent alveoli. The exud in these alveoli was composed chiefly of polymorp nuclear cells.

Gastrointestinal Tract: An examination of the g trointestinal tract showed the oral cavity and esophagus to be normal. The stomach showed p nounced hypertrophy of its mucosal rugae, especia in the antrum, at the greater curvature.

The small and large intestines were normal, as w the appendix.

The spleen weighed 5 Gm. The capsule was smo and purple. A cut section revealed a prominence the gray trabeculae and a moderately firm consiste of the parenchyma. The splenic vessels were norm

Microscopic examination showed occasional sm hemorrhages and edema of the parenchyma. The p creas weighed 5 Gm. It was characterized by slig increased firmness.

Microscopically, the outstanding observation consis of a fetal type of pancreatic tissue. The islet ce stained deeply and presented the features charact istic of early infancy. Similarly poor development w observed in the acinar structure of the gland.

Biliary System: The liver weighed 65 Gm. T capsule was smooth and glistening. The consiste was firm. A cut section revealed cloudy swelling the parenchyma. The intrahepatic biliary and por channels were normal. The main hepatic duct a the portal vein were normal.

Microscopically, there were pronounced dilatati and engorgement of veins and sinuses. The hepa cells showed definite hydropic degeneration.

The gallbladder was filled with light green, mod ately viscid bile, which could be easily expres through the cystic and common ducts.

Microscopically, the mucosal epithelium was att phied, although the normal contour of the rugae p sisted. There was also edema of the wall, includi the muscularis.

The common duct and the ampulla of Vater w patent and normal.

Urinary System: Each kidney weighed 7 Gm. T capsules stripped with ease, leaving a smooth, c gested surface. Cut sections showed cloudy swell of the parenchyma. The pelves were normal.

Microscopically, the outstanding feature was infantile state of development of the renal parenchy cortical as well as medullary. The cells lining Bo man's capsule were large and cuboidal and stain deeply characteristic of the kidney in early infancy.

The ureters were normal.

he bladder was distended, and its wall was thick-
. It contained about 30 cc. of clear yellow urine.
enitalia: The external genitalia were normal.
he uterus was 5 by 7 by 3 mm. in dimension, with
latively elongated cervical canal. The endometrium
myometrium were normal. The fallopian tubes were
nal. The ovaries measured about 5 mm. each in
test diameter and showed no changes.
he Endocrine System: The thymus had almost
rely retrogressed and was represented by a small
ntity of connective and lymphoid structure. Few
he corpuscles showed complete calcification.
he thyroid was small. Microscopic examination
ed a number of areas in which the fetal state of
lopment of thyroid parenchyma persisted. The
of the organ revealed a fairly normal structure.
he total weight of the adrenal glands was approxi-
ly 3 Gm. A section revealed scarcely any medulla.

Ribs and long bones showed only a slight irregularity of their epiphyses. The marrow of the ribs was abundant, but that of the tibia was sparse and mixed with a gelatinoid matrix. Ossification, including that of the cranial bones, was normal, although in the frontal region the bone was thinner than elsewhere.

Microscopically, the epiphysial line of the ribs was irregular and revealed loss of the normal parallel rays of the differential zone of cartilage. There was also diminution in the amount of calcium deposition. The tibial marrow was sparse. Most of the space was occupied by fat cells. The differential count of the cellular elements of a representative portion of the marrow was as follows: granulocyte series, 80 per cent (myeloblasts, 4 per cent; promyelocytes, 2 per cent; neutrophile myelocytes, 26 per cent, eosinophile myelocytes, 7 per cent; metamyelocytes, 2 per cent; stab forms, 2 per cent; polymorphonuclear neutrophils, 30 per cent, and eosino-

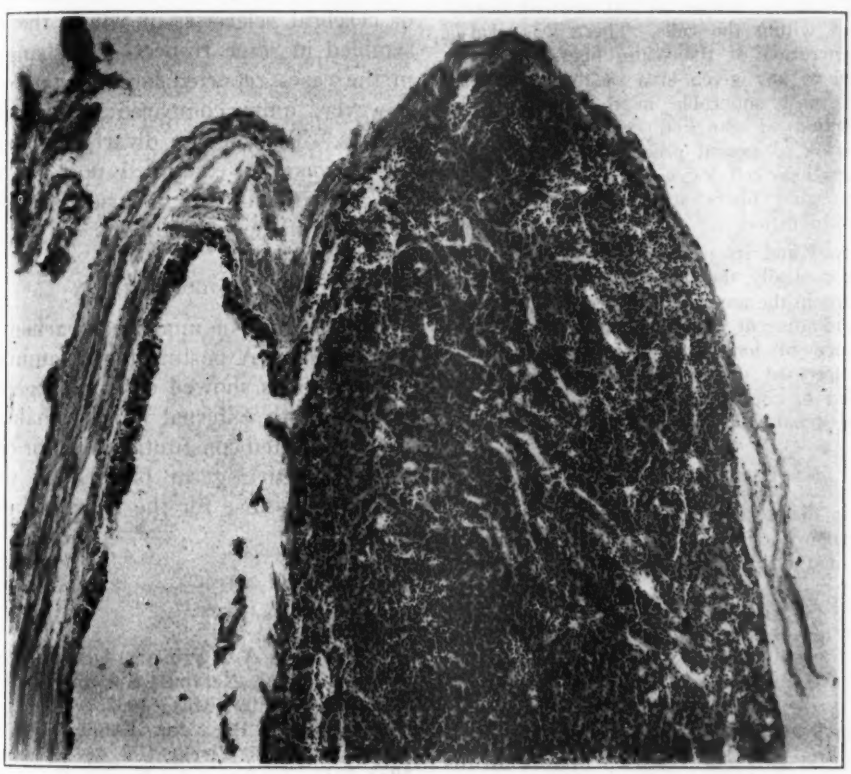

Fig. 3 (case 2).—Photomicrograph of section of the brain (× 70).

cortex was golden yellow throughout. Micro-
ically, the cortical cells showed hydropic changes.
medulla, although sparse in quantity, was other-
normal.
e pituitary gland was normal on section, although
ed to only about 4 mm. in greatest dimension.
oscopically, the pars intermedia showed moderate
changes and evidence of compression of the
hery of the pars glandularis.
mphatic System: Most of the lymph nodes were
ely discernible. The tracheobronchial node mea-
only about 5 mm. in greatest dimension. The
nteric nodes were pink and almost imperceptible.
lymph channels were similarly inconspicuous.
croscopic examination showed no changes in
ture.
eletal System: The muscles showed pallor, notice-
wasting and microscopic evidence of myoedema.

phils, 7 per cent); lymphocytes, 12 per cent, and monocytes, 8 per cent. Of the red cell series 15 per cent were erythroblasts and 10 per cent normoblasts. These values show a moderately diminished maturation of the marrow.

The joints were unduly prominent, especially those of the knees.

Central Nervous System: As the cranium was incised, a large amount of clear cerebrospinal fluid escaped. On removal of the brain from its base, a gray friable membrane, 2 mm. thick, was found covering the remaining dura of the middle fossa and base of skull. The rest of the meninges were thickened. The brain was congested, atrophic and shrunken. The gyri, however, were prominent, and the sulci were deep, especially in the frontoparietal regions. Here the two hemispheres tapered anteriorly so that the

anterior margins of the frontal lobe formed the apex of a pyramid of which the midbrain and cerebellum formed a base.

Microscopic section through the plaques covering the dura mater of the middle fossa and base showed distinct condensation, and collagen degeneration of the fibrous connective tissue of the arachnoid. Sections of the right parietal tube showed the general cytoarchitecture of the cortex to be well preserved. The most striking feature was the disappearance of most of the ganglion cell layer, this being especially true of the pyramidal layer. In some sections the destruction of the pyramidal layer took the form of cystic degeneration. Secondary to the destruction of ganglion cells there was a definite reactive gliosis. These features were most pronounced in the right frontal and right parietal areas, although they were also present on the opposite side. In regions where ganglion cells were not obliterated entirely, stains for fat showed degenerative granules within the cells. There was also a secondary degeneration of the white fibers, not particularly limited to any given area of the cortex, although it was most noticeable in the areas of the greatest destruction of ganglion cells. Axon stains showed destruction of axonal processes comparable to the degree of ganglionic cell destruction. Phosphotungstic acid stains for glial fibers strikingly illustrated an intense glial proliferation.

The spinal cord and its meninges showed no gross changes. Microscopically, there was distinct chromatolysis of the neurons in the anterior horns, with edema and congestion of the adjacent vessels. Myelin sheath stains revealed evidence of long tract involvement of the crossed and uncrossed pyramidal tracts. There was also involvement of the posterior columns, apparently implicating the spinal ganglion cells as well.

ANATOMIC DIAGNOSES

The anatomic diagnoses were: (1) cerebral degeneration and atrophy, external hydrocephalus and pressure atrophy of the pituitary gland; (2) infantilism (true dwarfism); (3) medullary hypoplasia of the adrenal glands; (4) rickets; (5) malnutrition and dehydration; (6) anemia, secondary.

COMMENT

These 2 cases present several points of interest worthy of emphasis. There was probably an inherited constitutional factor common to both of them. These dwarfs were results of a consanguineous marriage of first cousins. Eight of the fifteen pregnancies of the mother ended in miscarriages. Three of these miscarriages directly preceded the birth of the dwarfs. This history strongly suggests a defective germ plasm.

The essential anatomic changes found at autopsy in 1 of the dwarfs consisted of cerebral degeneration and atrophy, especially of t ganglion cells of the cortex. The pituitary gl was much reduced in size, owing to press atrophy by the hydrocephalus, and the pars int media was observed to be cystic.

The cases probably belong to the group cases of heredofamilial and degenerative disea of the central nervous system, and perha cerebral sclerosis or encephalitis periaxalis d fusa. The terminology seems to vary with t neuropathologist who describes the case. Fe raro [1] has attempted to classify these disease regarding them as primary demyelination pr esses. Schilder,[2] Krabbe,[3] Pelizaeus[4] a Merzbacher[5] have each described various ty of cerebral sclerosis, in which the changes r sembled in some respects the changes observ in the cases reported here. None of the cas however, quite compared with that of the dwarfs. The Sicilian dwarf described by Ha ings[6] was not examined post mortem; he no comparisons can be made between his c and that of these 2 patients.

CONCLUSION

A rare case of infantile dwarfism in sibli was studied. A postmortem examination of o of the dwarfs showed cerebral degeneration a atrophy with external hydrocephalus.

An inherited constitutional factor characteri by a defective germ plasm was probably t underlying cause for the changes in each of dwarfs.

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CONTRIBUTION TO KNOWLEDGE OF LAURENCE-MOON-BIEDL SYNDROME

THREE CASES OF MONSTROUS INFANTILE OBESITY

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The present report on the cerebral type of osogenital syndrome concerns 3 children, all mbers of the same family, whom circumstances bled us to observe. Our observations have n carried out under trying conditions, since family in question are showmen, living in vans. Our work would not have been pos- without the cooperation of several col- ues, such as Drs. Villasante, Torres Gost, a, Cortés, Oliva and Canbin y Amor.

One of us had the opportunity of seeing the st of the children when he was only 9 months It was intended at that time to publish a ort on the case, since the child's exceptional ess already presented certain features of strosity. As a result of the Spanish Civil r, however, the data were lost and publication me impossible. Luckily the dossier has been reconstituted and completed and re- s on the other 2 cases added.

REPORT OF CASES

se 1.—*History and General Observations.*—José A. ½ years old at the time of writing. He was born Dec. 17, 1934, at Agüime (Las Palmas, Grand ry) after a normal pregnancy. Confinement was ull term; the membranes ruptured a week before very. The delivery took two hours, and the child born nearly asphyxiated by the cord, which was d about his neck. His size at birth was normal, e had a great deal of wrinkled skin; as the father t, "the baby's skin was too big for him."

was breast fed until he reached the age of 2 , but from 4 to 5 months of age onward, to satisfy hild's enormous appetite, the breast feedings were emented by Canary Island *gofio* (wheat or maize roasted and then stone milled), which his grand- gave him after wetting and mixing it with his saliva, and by fish, bread and all kinds of other tuffs. Needless to say, this was done without any od whatever.

s development was Pantagruelic from the age of nth, which marked the beginning of a progressive ty which made him gain from 2 to 3 Kg. per h. At 9 months of age he had reached 18 Kg. 1). He went on at this rate until at 3 years of age "he filled his skin," as the father said. The obesity was by this time fully developed, and it remained nearly stationary afterward, progressing only in proportion to the child's age.

Teething began at 3 months and progressed at a rapid and continuous rate. We have not been able to discover at exactly what age he began to speak, but the parents say he was normal in this respect. On the other hand, at the time of writing he is still unable to walk and can stand for only a few minutes at a time, leaning against the wall or clinging to some piece of furniture. He ate alone at 1 year of age and has always had a large appetite, although not an exceptional one. He did not overcome soiling until he was 7 years old.

Fig. 1.—José at 9 months (case 1).

He had whooping cough in the first weeks of life. He has had frequent attacks of bronchial catarrh. At the age of 2 years he had an inguinal adenophlegmon for which operative intervention was necessary; the wound required two months to close. He also had measles, complicated by bronchopneumonia, and croupal laryngitis. He has had chronic otorrhea since he was 3 years old. He has habitual constipation, two or three days passing without a movement of the bowels; during the attack of measles five days passed without a bowel movement.

His daily diet, like that of his brothers and sisters, is as follows: breakfast consists of coffee with milk, bread, butter and "small cheese"; for dinner he has potatoes and meat or fish, with rather more bread than is eaten by a normal adult; he takes afternoon tea and

then a supper of eggs, bread, bananas and cheese or chocolate. Between meals he eats a good deal, particularly when on exhibition, as the spectators are constantly offering titbits to the performers. He drinks a great deal and passes a normal quantity of urine; he does not have enuresis.

His personality is gentle, placid and cheerful. He sleeps well and not too much. He is entirely without schooling.

Physical Examination.—As may be seen from the photographs (figs. 1 and 2), the subject is a gigantically obese child. He is obliged to remain lying down or seated because of some defect of the hips, possibly a double congenital luxation. We were unable to determine the nature of this condition because of his enormous obesity, which made exploration difficult and even made

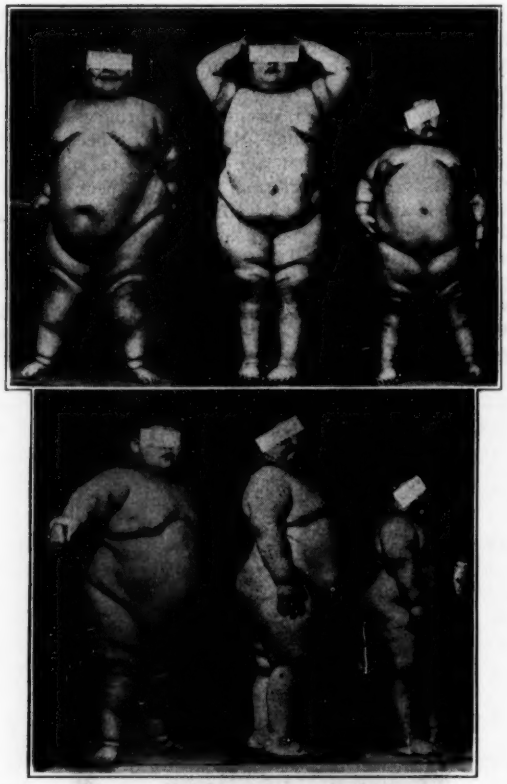


Fig. 2.—Two photographs of José, Sebastiana and Agustín.

it impossible to get a roentgenogram of the hip. Leaning against the wall or some piece of furniture, he can stand for a few minutes, but standing even for such a short time produces pronounced lumbar lordosis, while the hip is pushed upward, forming a huge roll of fat; he also has pronounced genu valgum and flat feet. With the help of a stick he can take a few steps, waddling like a duck, but he becomes tired at once and falls to the floor. Obviously he cannot get about alone; as a baby he used to drag himself along in a sitting position, but even that is impossible for him now.

His skin is an intense brown; his hair black, abundant, curly and glossy; it grows low on the forehead, and the eyebrows and lashes are thick; his complexion, together with his massive features, gives him a slightly negroid look. His features are large: fine black eyes, a large nose with a depressed root and the tip turned slightly upward, and a large mouth, with thick lips of a regular shape. He has perfect teeth, permanent (though, of course, he has no wisdom teeth yet), set in such sweeping arcs that some space is between the individual teeth, which are white, [illegible] and sound and have their enamel intact. The ton[gue] is large. The forehead is somewhat narrow tr[ans]versely; he has broad cheeks and strong jaws, wit[h] pronounced chin (all these features are much like [the] mother's, judging by a photograph of the family (fig. [illegible]). His ears are large, fleshy, well made and set close [to] the head. His hands and feet are large, broad and [illegible]; the hands are dimpled on the backs by reason of [the] large amount of panniculus adiposus on them. The [nails] are short and somewhat boat shaped. When seated [he] looks like a Buddha, with his legs crossed under [him], fatty mass of his belly with an extreme outward r[o]tation. His expression is drowsy and meek; his [eyes] cling torpidly to whatever he looks at.

His great obesity is noticeable in the photograp[hs]. The abundant panniculus adiposus extends under [the] entire skin of the scalp, face, trunk and limbs, especi[ally] on the trunk and at the origins of the limbs. It i[s] abundant that the heart tones and the respiratory m[ur]murs can hardly be heard. It falls from the shoulde[rs], disguising their shape, onto the chest, where ther[e]

Fig. 3.—The A. family. Front row, from left to r[ight] José (case 1), Agustín (case 3) and Sebastiana (case

a deep submammary fold. Over the abdomen it h[ere] down like an apron, completely covering the ge[ni]tals and reaching almost to the knees. There is an accu[mu]lation of fat over the entire length of arms and [legs], so that the limbs retain the folds or "rolls" of [in]hood, together with other abnormal folds on the [upper] arms and legs. The fatty mass is still thicker on [the] buttocks, hips and thighs, with a tendency to the [type] of distribution associated with a hypophysial d[isor]der although it does extend to the hands and feet. [As] regards the quality of the panniculus adiposus, it is [not] turgid, nor does it form "orange skin"; rather [it] is spongy, gelatinous and not very elastic, somewhat [sug]gesting myxedema.

The quality of his skin is good, but it bears [many] scars of many old pyodermas with some inguinal [and] submammary intertrigo. There is a slight down in [the] pubic region but none as yet in the armpits. The [voice] is hoarse, rough and monotonous, and the speech is [slow] and dull. The genitals are accessible only in the [supine] position; in order to reach them it is necessary to [lift] up the apron of abdominal fat and a mass of pubic [fat]. They look small on account of being buried in the [mass] of fat, but actually their size is approximately [normal] for a child of his age, and the testicles are in [scrotum]

es with normal wrinkles. The testicles are rather . There are erections, although the libido is in-e.

e body measurements of this subject are given in 1.

TABLE 1.—*Anthropometric Data in Case 1*

	Maximums	
	José	Normal Child of 9½ Yr.
t	104 Kg.	30.25 Kg.
t	130 cm.	135 cm.
t when seated	72.5 cm.	68.7 cm.
h of lower limbs	53 cm.	67 cm.
	126 cm.	135 cm.
h of hand	15 cm. (11.5% of height)	11.2% of height
h of foot	19 cm. (14.6% of height)	15.6 cm. (16.2% of height)
mference of head	58 cm.	52 cm.
mference of thorax	132 cm.	62.5 cm.
mference of abdomen	150 cm.	56.2 cm.
mference of arm	42 cm.	
mference of forearm	32 cm.	
mference of thigh	85 cm.	
mference of leg	45 cm.	

boratory Data.—Laboratory tests gave the follow-esults:

Basal metabolic rate, fasting	—32.0%
Basal metabolic rate 30 min. after ingestion of 100 Gm. of meat	—10.1%
Specific dynamic action	24.4%
Blood sugar, fasting	188 mg./100 cc.
Red blood cells	4,850,000
Hemoglobin	92%
Cell volume	95%
Leukocytes	9,800
Hemogram (Schilling):	
Basophils	0
Eosinophils	7
Myelocytes	0
Juvenile forms	0
Stab forms	4
Segmented forms	48
Lymphocytes	35
Monocytes	6
Urine free from albumin, dextrose and abnormal sediments	
Pulse rate	116
Blood pressure (Recklinghausen, palpatory)	83 mm. Hg
Axillary temperature	36 C.
Oral temperature	36.9 C.
Size of sella turcica	70 sq. mm.
Mental age (according to Binet-Simon tests)	5 yr. 10 mo.
Intelligence quotient	60%

roentgenogram of a hand shows ossification normal he subject's age, with sound, well shaped bones. entgenogram of a hip was a failure, for technical ns, and we were therefore unable to state the e of the anomaly which exists in that region. We nowever, inclined to think it is a double congenital ion. A roentgenogram of the skull, which is faulty se of technical difficulties, shows that there are no alterations, impressions or destruction. The sella a is of normal size and shape (fig. 4). There is lydactyly.

e electrocardiographic observation was made by Vega (fig. 5). The chief feature of the electro-gram is low voltage ventricular complexes, a cteristic symptom of hypothyroidism.

e ophthalmologic examination, made by Dr. Cortés, ed slightly increased ocular tension. The reaction e pupils is slow to both direct and indirect light. media are normal. The retinas are swollen as a of stasis, and it is impossible to determine the of the optic disks, which seem almost blotted out (edematous retinitis). There are intense angular conjunctivitis and edema of the upper eyelids.

Principal Features of the Case.—In summary, the subject presents a condition which began during the first month of life and led to precocious development and monstrous obesity. The child now weighs 73 Kg. more than a normal child, or three and one-half times the normal figure for his age; there are symptoms of hypopituitarism; the stature is normal, or, rather, somewhat short, on account of the defects in the bones; the lower limbs and the span are short. There are retinitis and also malformations (double congenital luxation, genu valgum and flat feet). The sella turcica is of normal size, and the ossification is good. There are some symptoms of hypothyroidism (low basal metabolic rate, mental torpor, hypothermia, constipation, mental deficiency and an electrocardiogram typical of hypothyroidism). The sexual development is almost normal. There are hyperglycemia, eosinophilia and relative lymphocytosis. The foregoing data, supported by our intimate knowledge of the case, have led us to classify the condition as the Laurence-Moon-Biedl syndrome associated with hypothyroidism. We shall attempt later to give a pathogenic explanation.

CASE 2.—*History and General Observations.*—Sebastiana is 8 years old at the time of writing; she was born on Aug. 7, 1936, a sister of the patient in case 1. She was born at full term, after a normal pregnancy and confinement, without asphyxia. Her weight at birth

Fig. 4.—Sella turcica in (*I*) case 1, (*II*) case 2 and (*III*) case 3 respectively.

was normal, but, like her brother, she had a great deal of excessive skin. Like him, she began to put on fat rapidly from the age of 1 month, reaching a maximum rate at the age of 4 years. The excess of fat was somewhat less than in her brother's case. Figure 6 shows the girl at the age of 2 years, with fat accumulated principally on the trunk, the arms and the thighs and the face and to a lesser degree on the legs.

Her unintelligent look, her M-shaped mouth and the accumulations of fat above the clavicle suggest myxedema. Nevertheless, she cut her first tooth at 4 months and spoke at 1 year.

She was exclusively breast fed for five or six months and then had mixed feeding until she was weaned at 18 months, the diet being the same as that described in the report on her brother. She has always had a good appetite. Her diet now is the same as her brother José's.

Up to 2 years of age, she did not walk alone. Her sleep is normal and not excessive, but nocturnal enuresis persists.

She had a slight attack of measles, and four months before the time of writing she had bronchopneumonia. She is inclined to catch cold easily, like her brothers José and Agustín. She has one or two normal bowel movements every day. Recently she has had frontal headaches every two or three days, which increase with enuresis but are relieved by the usual analgesics.

She has had no schooling. She has a cheerful disposition and the normal habits of a small girl.

Physical Examination.—Examination reveals, on the whole, the same morphologic characteristics as in her two brothers (fig. 2), although there are some obvious

differences in details. Thus, her stature is somewhat greater than José's, and her fat, though considerable, does not equal José's in amount. Its distribution also is different: it is abundant on the face and head, trunk, buttocks, arms and thighs and a good deal less so on the forearms and hands, legs and feet.

The head is larger than José's and is wide because of the great accumulation of fat on the cheeks and cheek bones; otherwise, it is well shaped. The scalp is covered with a wealth of long, heavy, silky, shiny, curly black hair. The ears are comparatively large, fleshy and set close to the head, with two appendixes; nose is short and fleshy; the cheekbones are broad; mouth is large and M shaped, with thick lips. S has already cut her second teeth except for one lo right premolar, which is not out yet, although she lost the corresponding deciduous tooth. The teeth perfect, large and set in wide and well shaped arch there is some space between the teeth. The tonsils enlarged. The tongue is large. The eyes are bla they look sunken and rather small because of accumulation of periorbital fat. They are lively quietly cheerful. The eyebrows are heavy and the la thick and regular.

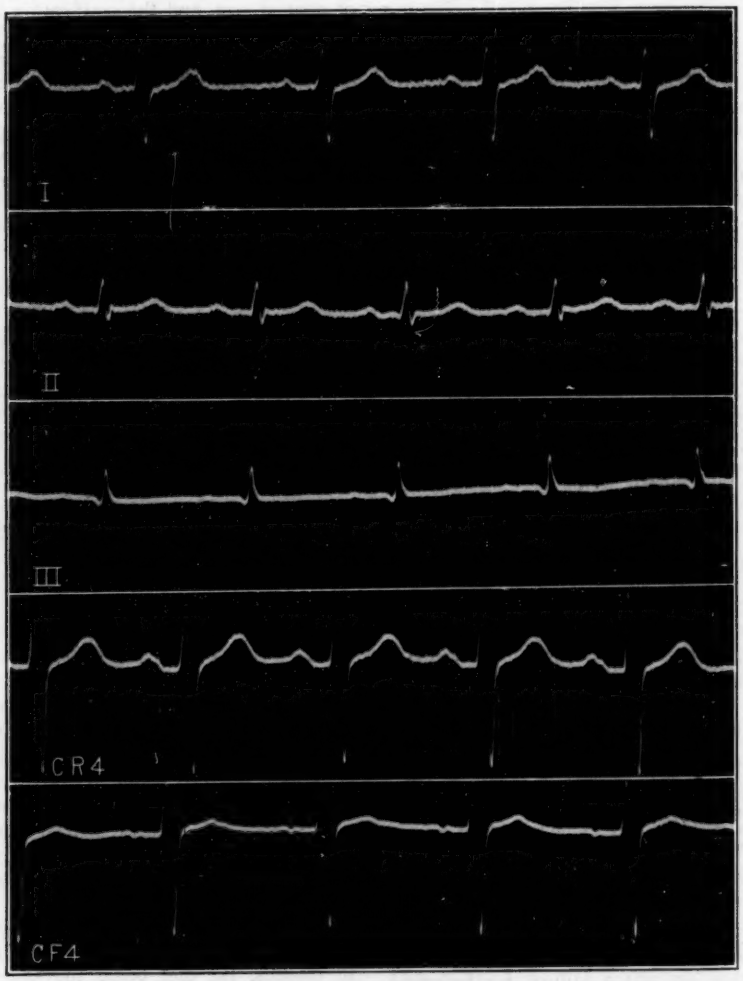


Fig. 5.—Siemens electrocardiogram of the subject in case 1 (José): 1 millivolt = 1 cm. Cardiac freque 92 per minute. Sinus rhythm. Normal auricular complexes. Normal auriculoventricular conduction of the s ulus. Ventricular complexes: QRS group with deep S wave in lead I. QRS groups rickety with low volt in leads II and III. RT and ST spaces normal. Isoelectric T wave in lead III. Normal precordial leads (sl flattening of T in CF4). The outstanding feature from a pathologic standpoint is the low voltage in leads II a III. Possible hypothyroidism curve.

the right ear has a cartilaginous operculum about the size of a quarter-dollar fixed by a peduncular root to the base of the helix; the left ear has, on the free edge of the tragus, a small cartilaginous nodule the size of a grain of Indian corn. The jaw is large, with a prominent chin and a large accumulation of submental fat, or double chin. The features are pronounced, with a broad forehead which gives a false impression of prominence because of the depressed root of the nose and the pronounced relief of the frontal sinuses. The

The skin is not so brown as her brother's. The p niculus adiposus is slighter than José's but firmer. T is a great deal of long hair in the armpits and in pubic region. Menstruation has not yet begun. does not have genu valgum but has flat feet, with heels raised like a scorpion's tail because of the accu lated fat in that region. There is pronounced lu lordosis. She walks easily in spite of her great h runs and can even jump a little. She is good natu and cheerful and fond of the games usually played

of her age in the rural districts of Grand Canary. shows no libido, but there are some signs of ral coquetry.

he child's measurements are given in table 2.

TABLE 2.—*Anthropometric Data in Case 2*

	Sebastiana	Maximum for a Normal Girl of 8 Yr.
ght	90 Kg.	25.9 Kg.
ght	134 cm.	126.5 cm.
ght when sitting	77.5 cm.	72.3 cm.
gth of lower limbs	56 cm.	62.5 cm.
n	137 cm.	124.5 cm.
d	11.5 cm. (11.5% of height)	11.2% of height
	21.5 cm. (15.2% of height)	16.2% of height
umference of head	63 cm.	51.2 cm.
umference of thorax	119 cm.	58.5 cm.
umference of abdomen	120 cm.	52.5 cm.
umference of arm	41 cm.	
umference of forearm	33 cm.	
umference of thigh	74 cm.	
umference of leg	47 cm.	

aboratory Data.—Laboratory tests gave the follow- results:

Basal metabolic rate, fasting		+5.2%
Basal metabolic rate ½ hr. after ingestion of 100 Gm. of meat		+28.2%
Specific dynamic action		18.2%
Blood sugar, fasting		176 mg./100 cc.
Blood urea		30 mg./100 cc.
Blood cholesterol		175 mg./100 cc.
Red blood cells		4,400,000
Hemoglobin		85%
Cell volume		96%
Leukocytes		13,100
Hemogram (Schilling):		
Basophils	0	
Eosinophils	10	
Myelocytes	0	
Juvenile forms	0	
Stab forms	4	
Segmented forms	38	
Lymphocytes	44	
Monocytes	4	
Sedimentation rate (Westergren)		17 mm. in 24 hr.
Sedimentation index		20.25
Urine:		
Specific gravity		1.018
Albumin		0.75 Gm. per 1,000 cc.
No dextrose		
No acetone		
Some cylinders		
No red blood cells		
Blood pressure (Recklinghausen, oscillatory)		170/1[illegible] mm. Hg
Mean tension, 150 mm. Hg		
Oscillometric index, 15 mm.		
Axillary temperature		36 C.
Oral temperature		37.4 C.
Mental age (according to Binet-Simon tests)		7 yr.
Intelligence quotient		87%
Size of sella turcica		64 sq. mm.

rom a roentgenogram of a hand it can be seen that ification is at least three years in advance of the nal, as the pisiform bone is already in existence well developed. Actually, this roentgenogram, to e from the mature wrist bones, the presence of isiform bone and a sesamoid bone in the thumb and narrowness of the epiphysial lines, resembles that 12 or 15 year old girl. A roentgenogram of the ium is normal (fig. 7), as are the shape and size of sella turcica, which measures 64 mm., 62 mm. being ormal figure for a child of this age and sex, accord- to Briel (fig. 4). There are no signs of hydro- alic compression. There is no polydactyly.

n examining the heart, we discovered a slight olic murmur over the apex, as a result of the aforementioned hypertension. Connected with this is albuminuria: there is 0.75 to 0.5 Gm. of albumin per thousand cubic centimeters of urine. There are isolated granular and granular-epithelial cylinders. These urinary changes are more accentuated in the orthostatic urine, but they do not disappear in the night urine. There is abundant uric aciduria. The electrocardiogram (fig. 8) also shows the result of hypertension.

Fig. 6.—Sebastiana (case 2) at 2½ years of age.

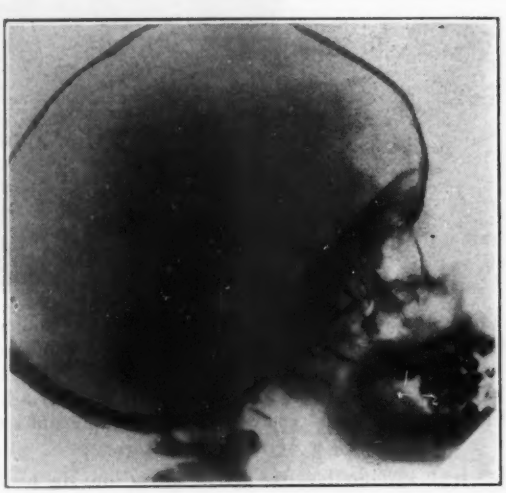


Fig. 7.—Roentgenogram of the skull of Sebastiana.

The ophthalmic examination, made by Dr. Cortés, showed normal ocular tension, slow reaction of the pupils to light, normal media and retinopapillitis with vascular stasis.

Principal Features of the Case.—In summary, the obesity (the subject weighs 60 Kg. more than normal), the auricular and osseous malformations (lordosis and flat feet), the normal ossification and the retinitis, sup-

plemented by our intimate knowledge of the case, lead us to classify the condition as the Laurence-Moon-Biedl syndrome. Eosinophilia and lymphocytosis are present. Her intelligence is normal. Nevertheless, certain points essential to the picture make this case different from the former one. The child's tallness, due to the greater measurements of the trunk; the pattern of obesity of the upper part of the body, particularly of the head and trunk; the hypersensibility; the hypertension, with high minimal blood pressure, albuminuria and cylindruria; the hyperglycemia, and the normal basal metabolic rate

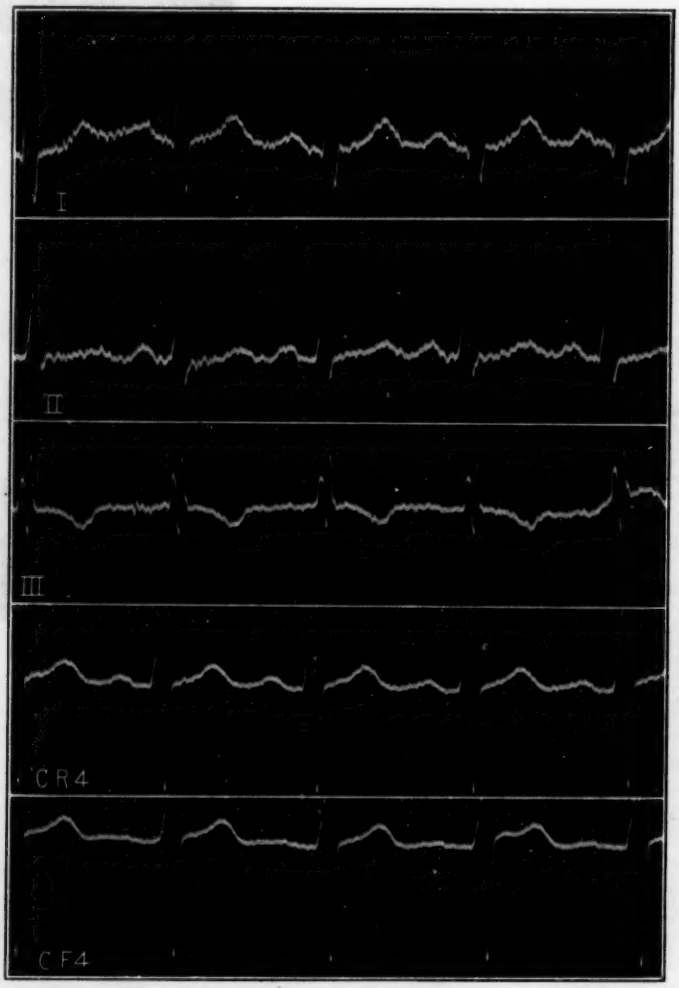


Fig. 8.—Siemens electrocardiogram of the subject in case 2: 1 millivolt = 1 cm. Cardiac frequency 111 minute. Sinus rhythm. Normal auricular complexes. Normal auriculoventricular conduction of the stim Ventricular complexes: QRS groups normal in leads I and II. M-shaped QRS groups in lead III. RT ST spaces normal. Negative T wave in lead III. Leads CR4 and CF4 (precordial leads) normal. The hea of the left ventricular type with some indications of a transverse heart.

with high specific dynamic action, all fit into the picture of Cushing's pituitary basophilism. The normal level of cholesterol together with obesity and the cerebral phenomena (papilloretinitis, headaches, etc.) point to a hypothalamohypophysial factor and suggest that an adrenal medullar genesis is unlikely. We therefore label the picture Laurence-Moon-Biedl syndrome with traces of pituitary basophilism.

Case 3.—*History and General Description.*—Agustín A. is 6 years old at the time of writing. Like his brother and sister, he was born in Las Palmas, Grand Canary, at Agüime. The pregnancy, confinement and birth were normal. Like his brother and sister, he of normal size at birth, but the father says that he less excess skin and that therefore the parents, rem bering what had happened in the 2 former cases, gue that he would not be quite so fat as the other 2 dren. This proved to be the case.

He was entirely breast fed for four or five mo and had mixed feeding up to the age of 1 year. walked at 2 years. He cut his first tooth at 4 mo and spoke fairly well at 1½ years. He was able to alone at 1 year. His only illnesses have been a

attack of measles and repeated attacks of bronch to which, like his brother and sister, he is subject. them, too, he began to grow excessively fat whe was 1 month old, though he was always less fat they. The reader may compare the photograph figure 9, taken when he was 9 months old, with of his brother José at the same age (fig. 9). difference is obvious.

His appetite has always been excessive. He has or two normal bowel movements a day. His sle normal and not excessive. His disposition is res merry and infantile. He has had no schooling.

sical Examination.—On examination the subject seen to be an obese child, of a robust constitution, dark skin and abundant, curly, glossy black hair. head is well proportioned, though somewhat large count of the accumulation of subcutaneous fat. As brother and sister, the forehead looks prominent se the root of the nose is sunken. The features arge, particularly the jaw, and the chin is pro-ed, but all are well proportioned and shapely. dental arches are superb, and in them the first are perfectly placed, with ample space between Of the permanent teeth the two lower middle rs and the 6 year molars have all come through. quality of the enamel is perfect, and the shape teeth is normal. The ears are large and perfect, ut any malformations, and set close to the head.

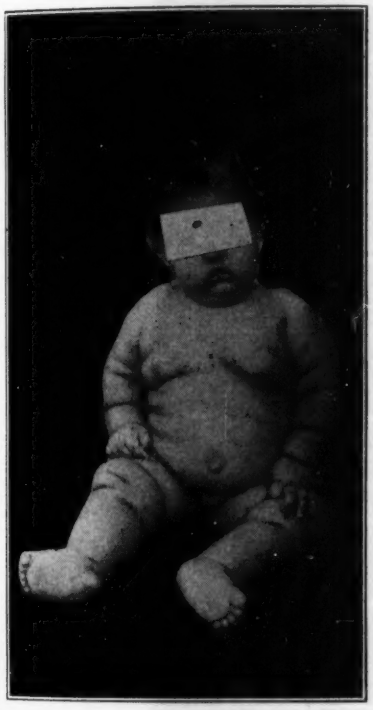


Fig. 9.—Agustín at the age of 9 months.

yebrows and lashes are full; the eyes are black, and well proportioned. The hands and feet are and strong, with many dimples, like a baby's, due accumulation of subcutaneous fat. There are the l number of fingers and toes. The fingers are long and well shaped, as are the nails. There enormous quantity of panniculus adiposus covering hole body, even the scalp, but it is most abundant hips, belly, breasts, subclavicular regions, thighs, ks and arms. This abundance results in a kind of of hypogastric panicle, like breasts, which hides all genital organs and produces three deep cir-folds on each arm and one internal suprapatellar n each thigh. The thickness of the panniculus us diminishes on the lower part of the legs. In ild, as in his sister, the adipose tissue is some-soft and gelatinous, blotting out all lines of cation, and it is only by deep adhesions of the t some points that folds are produced which he fat into regions. This abundance makes pul-y and cardiac auscultation difficult, although not ible. The skin is of good quality, with a ten-dency to hyperpigmentation; submammary and inguinal intertrigo are present; on the thighs and hips there are several scars left by pyodermas, contracted as a result of the child's habit of sitting naked on the ground. There is no axillary hair, but some short hair may be seen in the pubic region. The testicles are in the scrotum but are partially undescended and are rather small. The penis appears somewhat small, chiefly because of the accumulation of fat, in which it is almost enclosed. The child has genu valgum.

The measurements of this subject are given in table 3.

TABLE 3.—*Anthropometric Data in Case 3*

	Augustín	Normal Maximum at 6 Yr.
Weight	65 Kg.	21.8 Kg.
Height	115 cm.	116 cm.
Height when sitting	70 cm.	61 cm.
Length of lower limbs	48 cm.	55 cm.
Span	116 cm.	114 cm.
Length of hand	14.5 cm. (12.6% of height)	11.6% of height
Length of foot	19 cm. (16.5% of height	15.6-16.2% of height
Circumference of head	57 cm.	55.5 cm.
Circumference of thorax	102 cm.	57 cm.
Circumference of abdomen	112 cm.	52 cm.
Circumference of arm	39.5 cm.	
Circumference of forearm	22 cm.	
Circumference of thigh	67 cm.	
Circumference of leg	42.5 cm.	

Laboratory Data.—Laboratory tests gave the following results:

Blood sugar, fasting		144 mg./100 cc.
Red blood cells		4,420,000
Hemoglobin		83%
Cell volume		94%
Leukocytes		10,200
Hemogram (Schilling):		
Basophils	0	
Eosinophils	5	
Myelocytes	0	
Juvenile forms	0	
Stab forms	3	
Segmented forms	30	
Lymphocytes	56	
Monocytes	6	
Urine: Free from albumin, dextrose and abnormal sediment		
Pulse rate		130
Maximum blood pressure (Reckling-hausen, palpatory)		85 mm. Hg
Axillary temperature		35.9 C.
Oral temperature		36.8 C.
Size of sella turcica		121 sq. mm.
Intelligence quotient (Binet-Simon)		93%

A roentgenogram of a hand shows that ossification is completely normal for the child's age; the bone structure is also normal. A roentgenogram of the cranium is normal, as are the shape and structure of the sella turcica. The latter is uniformly widened; its surface is far larger (fig. 4) than is normal for a 6 year old child (58 mm.). An ophthalmologic examination, made by Dr. Cortés, shows the presence in the fundi of retinopapillitis, with prominent veins.

It was not possible to determine the basal metabolic rate because of the child's lack of docility. A superficial cardiologic examination, made by Dr. Vega, revealed a gentle systolic murmur at the apex. The electrocardiogram is normal (fig. 10).

Principal Features of Case.—In summary, the condition began at 1 month of age; macrosomia developed as a result of obesity. At the time of writing the child

weighs 43.2 Kg. more than normal. There are some signs of precocious development; the stature and span are normal; the lower limbs are short; the sexual development is good, and there are even some signs of precocious secondary sexual characteristics (pubic hair). Retinitis and genu valgum are present. The sella turcica is large. Ossification is normal. The mental development is good. There are hyperglycemia, eosinophilia and lymphocytosis. The condition is familial. We may therefore say that this is an instance of the Laurence-Moon-Biedl syndrome.

HISTORY OF PARENTS.—*Mother.*—The anamnesis of the family is interesting. The mother of these children is 32 years old at the time of writing. Menstruation started when she was 14 years of age (obviously late for a native of the Canary Islands) and was troublesome and accompanied by dysmenorrhea. Her monthly periods ordinarily occur at intervals of twenty-eight days and last for eight days each, but sometimes they last a fortnight. She was married at 15 years and did not become pregnant until two years later; this pregnancy was interrupted at the end of a month and a half by spontaneous abortion. A year later she had a heal normal daughter, who is now 15 years old. Three y later she had another healthy daughter, who is now years old. At the end of another three years she birth to the first of the obese children; the next Sebastiana was born (case 2), and two years later last of the 3 children with the Laurence-Moon-B syndrome came into the world. After this series pathologic children she had, two years ago, a norm child, who is also alive (fig. 3). This girl is healt and strong, of a robust build and tall. After her confinement the mother began to put on fat and tinued to do so until she reached her present we 105 Kg.

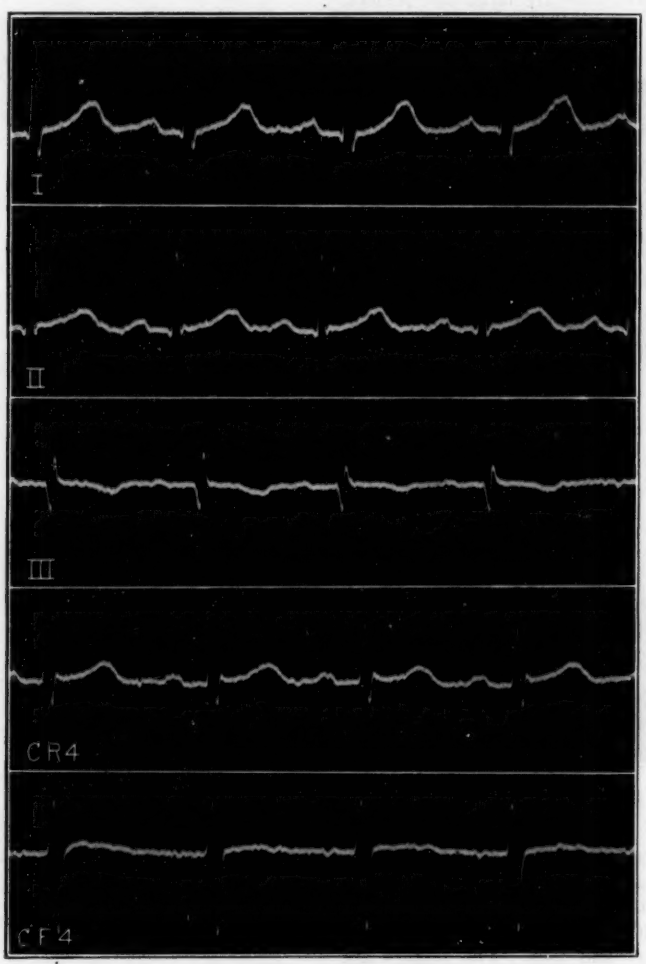


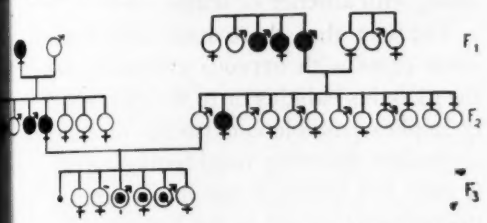
Fig. 10.—Siemens electrocardiogram of Augustín (case 3): 1 millivolt = 1 cm. Cardiac frequency 109 minute. Sinus rhythm. Normal auricular complexes. Auriculoventricular conduction of the stimulus nor Ventricular complexes: QRS groups normal in leads I and II. QRS group with downward initial wave dominating in lead III. RT and ST spaces normal (somewhat high in lead II), followed by normal T in leads I and II and negative T wave in lead III. CR4 and CF4 (precordial leads) normal except for a defi flattened T wave in the latter. There is no disturbance of the intracardiac conduction of the stimulus, nor there any data of coronary significance. At most there might be a question of a transverse heart.

Her build is vaguely acromegaloid: She has c features, a strong jaw and large hands. The turcica is normally shaped, the anterior clinoid proc being somewhat sunken; its surface is 96 sq. mm., 15 mm. horizontal diameter and 9 mm. in its ve diameter, or almost normal. A roentgenogram of hand is completely normal, showing the epiphysis the diaphysis joined and normal bone structure. S

ingly like her 3 abnormal children and has like a sunken nose root. She is left handed.

e comes from a family of wrestlers. Her father rather short; he died at 60 years of age of a ancle. Her mother died at 59 of a gastric r. She, like her daughter, was tall and robust. e were 7 children in the family, of whom 2 were ordinarily fat and tall and 1 very short.

ther.—The father is 41 years old and is healthy t for frequent colds. His build is normal, with a ency to thinness and spareness. He had 11 brothers sisters, 5 of whom died young; the remainder are r thin, except for 1 sister, who is large and noticefor her obesity. The children's paternal grandr was also large and strong, having been a wrestler;



g. 11.—Genealogic tree of the A. family. Dark s, obesity; white circles, no obesity.

as remarkably obese, as were 2 of his siblings ealogic tree, fig. 11). The two maternal grandnts were distant cousins of the paternal grandfather. e father's build is much like that of his healthy hters. He had a negative Wassermann reaction.

COMMENT

ereditary and Recessive Character of the drome.—When the genealogic tree is ined (fig. 11), it seems probable that the ssive obesity here described is a hereditary of a recessive type. The appearance of ral instances in the same family supports the that the condition is hereditary; on both father's and the mother's side there have instances of abnormal obesity, which may been more or less similar to the phenotypical ic considered here. If this family is analyzed rding to Weinberg's "proving method," it ars that exactly 25 per cent of the descens of the four grandparents were affected, a which seems to indicate that the trait is recesthat this is the case has in fact been estabd by other writers. Cockayne and his colrators,[1] analyzing 107 cases from all over world, found that the proportion of sick to hy brothers and sisters is 1.42:1. If persons have died or may possibly be sick are ined, the ratio increases to 1.7:1, a figure n points to a recessive hereditary trait. Also, pigmentary retinitis which is a part of the rome is a recessive hereditary trait, as is well known, only the polydactyly (which is lacking in our cases) is a dominant hereditary trait.

The mother's phenotype includes some minor peculiarities belonging to the syndrome (her build, her obesity and the sunken nose root); this suggests that the components of the recessive trait may appear in some of the carriers, in ever increasing numbers up to complete manifestation of the trait.

The fact that the 2 maternal grandparents were relatives of the paternal grandfather, with a pathologic phenotype, leads one to suppose that among the mother's forebears there was a concentration of the recessive factor; this is evident from the appearance of 3 obese children among 7 brothers and sisters, almost repeating the aforementioned proportion of 25 per cent.

Cause of the Condition.—As regards the origin of the syndrome, we believe it to reside in a defect of the hypophysis. We base this conclusion principally on one detail which is repeated in all 3 cases: the fact that the children were born normal and that only at the end of the first month did the most striking symptom—obesity—begin to manifest itself. This symptom progressed, rapidly for four years and then more slowly; at the same time there was partial hyperpituitarism (overdevelopment and somatic precocity in all 3 children and hypergonadism and basophilism in the girl); in the oldest child hypothyroid component is now manifest. It seems, therefore, as though a congenital deficiency of the hormonal factor which regulates the consumption of fat had been compensated in utero by maternal synkainogenesis; once the mother and the child were separated, the maternal hormone which the child carried at birth was apparently eliminated or exhausted, and the defect became widespread, as occurs in athyroidism. Since these infants were breast fed, it is evident that the mother's milk did not supply them with the needed hormone. Perhaps the hormone was ineffective when taken orally and would have had to enter the blood stream directly to preserve its activity; a more simple explanation is that the hormone was lacking from the mother's milk.

For the evolutionary course of the defect throughout the children's lives, too, a purely endocrinologic explanation might be given. In the first period the partial hypophysial deficiency with fatty thesaurismosis sought correction through a compensating reactive pituitary hyperfunction, made manifest in the precocity and intensity of somatic development; in the girl this led to an additional Cushing basophilism syndrome. About the age of 4 years the original par-

[1] Cockayne, E. A.; Krestin, D., and Sorsby, A.: J. Med. 4:93, 1935.

tial hyperfunction got under control to some extent. Finally, there was premature exhaustion of the overstimulated hypophysis, showing itself in the first subject at the age of 9 years in hypothyroidism, which was probably secondary to the lack of the thyrotropic factor. Indeed, an examination of this child's photographs (figs. 1, 2 and 3), shows that it was only from 6 years old onward that the hypothyroid facies became noticeable; the magnificent condition of his bones and teeth makes us discard all idea of primary hypothyroidism, which could not have failed to come out in both systems. Besides, similar cases have been described by other writers. An example is Parhon's case [2] of a child of 13½ years who showed the complete Laurence-Moon-Biedl syndrome together with thyroid insufficiency. It should be noted that this child was at the prepuberal age. The same phenomena occurred in Willi's 2 cases,[3] in which 2 children of 12 and 11 years respectively both had hypothyroidism as well as the Laurence-Moon-Biedl syndr... This writer also mentions a third case previo... reported by Denzler, which he was able to s... again when the patient was 22 years old; ... found mental backwardness, a metabolic rat... less than 17.5 per cent, a specific dynamic ac... of 12 per cent and a precociously old appeara... On the contrary, in 1 of dell'Acqua's cases,[4] ... volving a little girl, there was precocious pube... with menstruation at 9 years, precocious clo... of the epiphysial lines, overdevelopment of ... genital organs and secondary sexual charac... istics, with absence of libido.

The fact that there have also been repor... some cases with nervous symptoms referable ... the globulus pallidus or to the diencephalon m... ly implies possible coexistence of developme... anomalies affecting neighboring neural regi... it does not diminish the importance of the p... undoubtedly played by the hypophysis in the p... duction and development of this syndrome.

2. Parhon, C. I.: Bull. et mém. Soc. roumaine d'endocrinol. **7**:47, 1941.

3. Willi, H.: Jahrb. f. Kinderh. **133**:12, 1931.

4. dell'Acqua, G.: Schweiz. med. Wchnschr. 7... 1943.

MASSIVE INFECTION WITH TRICHURIS TRICHIURA IN CHILDREN

REPORT OF FOUR CASES, WITH AUTOPSY

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nfection with Trichuris trichiura (whip-m) is widespread, and in Panama the inci-ce is high, as demonstrated by routine exam-ion of specimens of stools. Although exact istics for Panama are not available, this site occurs commonly, either alone or in bination with other intestinal parasites.[1] An ysis of 1,307 autopsies done by me from to 1929 at Hospital Santo Tomás showed 374 persons (28.6 per cent) harbored ms. Of this number, 100 (7.6 per cent) e infected with T. trichiura, either as a le parasite or in combination with other stinal parasites. The maximum number of sites found in any one patient in this series 400. The heaviest infections were observed oung children. There were 2 infants, 1 of months and the other of 16 months, each of m harbored 400 parasites. A 3 year old d had 300 worms, and an 8 year old child 200 worms.

n general, T. trichiura has been considered latively harmless parasite, producing symp-s and physical signs only when present in e numbers. However, a survey of the scanty ature on this subject provides considerable ence that serious symptoms and physical s may result. Echeverri,[2] of Colombia, South erica, reported the presence of T. trichiura 6 of 20 patients with appendicitis. In 3 of e patients from 6 to 10 parasites were found he appendix. He expressed the opinion that this parasite might be the etiologic factor in many cases of chronic appendicitis occurring in tropical countries. In a study of 129 appendixes removed from children living in the city of New York or the vicinity, Cecil and Bulkley[3] found that 19 (15 per cent) contained either Enterobius vermicularis or T. trichiura, there being 2 instances of the former and 17 of the latter. In 15 of these specimens the appendicitis was of the catarrhal and in 4 of the gangrenous type. Enteritis was reported by Wade[4] and by Cade and Garin.[5] Nervous manifestations, including convulsions, were observed by Shtsherbak.[6]

Musgrave, Clegg and Polk[7] reported the death of a 24 year old Filipino from trichuriasis and severe secondary anemia. At autopsy over 200 trichurids were found in the lower part of the ileum. Jamieson and Lauder[8] reported a fatal case of trichuriasis in a child. Da Matta[9] reported on a 4 year old boy who had severe diarrhea, with blood and mucus in the stools, an erythrocyte count of 580,000 and a hemoglobin level of 15 per cent. At autopsy 590 trichurids were found in the lower part of the ileum and the cecum, along with numerous hemorrhagic and ulcerated areas confined to these regions of the bowel.

In 1927 Fernán-Núñez[10] published a comprehensive paper entitled "Pathogenic Role of

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From the Division of Pathology, Hospital Santo ías.

The data for the present article were assembled and lished posthumously for Dr. Lawrence Getz by Lieut. Nathan H. Einhorn, Medical Corps, Army of the ed States.

1. Whittier, L.; Einhorn, N. H., and Miller, J. F.: uriasis in Children: A Clinical Survey of Fifty s and Reports of Three Cases with Heavy Infection Striking Clinical Symptoms, Am. J. Dis. Child., to blished. Einhorn, N. H.; Miller, J. F., and Whit-L.: Intestinal Polyparasitism: Clinical Survey of Hundred and Sixty-One Cases of Infection with iple Intestinal Parasites in Children, ibid. **69**:350-(June) 1945.

2. Echeverri, M. A.: Adherencias pericecolicas, de med. y cir. Bogota **14**:449-453, 1922-1923.

3. Cecil, R. L., and Bulkley, K.: A Critical Study of Oxyuris-Trichocephalus Appendicitis, Am. J. M. Sc. **143**:793-810 (June) 1912.

4. Wade, B. N.: A Case of Enteritis from Trichocephalus Dispar, J. A. M. A. **56**:743 (March 11) 1911.

5. Cade, A., and Garin, C.: Entérite trichocephalienne, Arch. d. mal. de l'app. digestif **4**:305-324, 1910.

6. Shtsherbak, A. E.: Pathological Importance of Trichocephalus Dispar, S.-Peterburg, V. S. Ettinger, 1908; translated, Rev. de méd., Paris **30**:642-665, 1910.

7. Musgrave, W. E.; Clegg, M. T., and Polk, M.: Trichocephaliasis with a Report of Four Cases, Including One Fatal Case, Philippine J. Sc. **3**:545-566, 1908.

8. Jamieson, J. G. S., and Lauder, J. M.: Case of Fatal Trichocephaliasis in a Child, Brit. M. J. **2**:1772, 1910.

9. da Matta, A.: Entero trichocephalose, Brasil-med. **31**:141-143, 1917.

10. Fernán-Núñez, M.: Pathogenic Role of Trichocephalus Dispar (Trichuris Trichiura), Arch. Int. Med. **40**:46-57 (July) 1927.

Trichocephalus Dispar," in which he stressed the mildness of trichuriasis. More recently, however, there has been greater appreciation of the pathogenic potentialities of infection with this helminth. According to Craig and Faust [11] heavy infection with T. trichiura may result in a clinical syndrome resembling severe hookworm disease. However, reports of cases of such infection in children are infrequent. Therefore, it seemed important to describe the clinical and pathologic findings in 4 such cases seen in Hospital Santo Tomás, Panama, republic of Panama.

REPORT OF CASES [12]

CASE 1.—A 13 year old mestizo girl residing in an unsanitated district in the Republic of Panama was admitted with a history of having had four to eight watery stools daily, weakness and loss of weight, extending over a period of three months. The parents stated that no gross blood was observed in the stools.

Physical Examination.—The child was acutely ill, emaciated and apathetic. The temperature was 101.4 F.; the respiratory rate was 28 and the pulse rate 140 per minute. The conjunctivas were bluish white, and there was pronounced pallor of the mucous membranes of the lips; the palms and the soles were waxen yellow. The left border of the heart extended 1 cm. to the left of the midclavicular line; the right border extended approximately 2 cm. to the right of the sternum; the heart rate was rapid; the sounds were of poor quality, and a soft systolic murmur was audible over the base. The abdomen was distended; the liver and spleen were not palpable.

Laboratory Examination.—The hemoglobin concentration was 30 per cent (Sahli); there were 2,300,000 erythrocytes, 61 per cent neutrophils, 36 per cent lymphocytes and 3 per cent eosinophils. Repeated blood smears were negative for malaria parasites. The urine was normal. The stool was positive for Endamoeba histolytica; ova of T. trichiura, Ascaris lumbricoides and Uncinaria, and larvae of Strongyloides sterocoralis.

Treatment and Course.—Emetine hydrochloride, ½ grain (0.03 Gm.), was administered daily for three successive days; then the patient received a course of treatment with oil of chenopodium. Death occurred suddenly on the fifth day.

Autopsy Observations.—General Data: The body weight was 52 pounds (23.6 Kg.) and the length 61 inches (155 cm.). Pronounced emaciation and pallor of the mucous membranes of the lips were present.

Head: The brain was not examined.

Lungs: There were no adhesions between the lungs and the chest wall. Both lungs were dull red and soft in consistency. On section all the lobes of the lungs appeared wet; extensive pulmonary edema was present and a frothy fluid could be expressed readily from the cut surface.

Heart: The heart was enlarged in situ and weighed 100 Gm. The ventricular walls were thin and friable, but otherwise no abnormalities were observed.

Peritoneum: The lining of the peritoneal cavity smooth and glistening, and no exudate or excess was present.

Digestive Tract: The mucosa of the esophagus stomach was grayish pink; there were no lesions in mucosa, and no parasites were found. In the intestine 6 uncinarias and a few scattered trich were found. Beginning with the cecum, including appendix, and scattered throughout the entire large testine were over 1,100 trichurids (T. trichiura). number does not represent all that were present, number of the parasties were lost in opening the bo The mucous membrane of the large intestine and of cecum was injected and covered with a thick laye mucinous material, in which were found amebas (E. tolytica). No ulcerations or other lesions of the mu membrane of the large intestine were observed. mesenteric lymph glands were enlarged and hyper

Liver: The liver was enlarged, extended 2 cm. b the costal margin and weighed 850 Gm. The o was soft, the edge smooth and Glisson's capsule in The cut surface was golden yellow and fatty in app ance, and the lobular markings were indistinct. gallbladder was normal.

Spleen: The spleen was enlarged, weighed 120 and was grayish brown; the cut surface revealed di fibrosis throughout.

Kidneys, Adrenals and Pancreas: Except for pa these organs were essentially normal.

Anatomic Diagnoses: The following diagnosis made: (1) massive infection with T. trichiura, (2) fection with E. histolytica, (3) infection with Uncin (4) secondary anemia, (5) dilatation of the heart, pulmonary edema, (7) fatty changes in the liver (8) emaciation.

CASE 2.—A 4 year old mestizo boy residing in an sanitated area in Colombia, South America, was adm with the complaints of bloody diarrhea, fever and c of three days' duration. The past history and the fa history were not contributory.

Physical Examination.—The child was acutely emaciated and listless. His temperature was 102.2 his pulse rate was 160 and his respiratory rate 24 minute. There was extreme pallor of the mucous m branes of the lips and mouth; the palms and the were waxen yellow; the tongue was coated, the br foul and the abdomen greatly distended; the liver the spleen were not palpable, and pronounced bo rygmus was present. The rectal mucosa was prolap and several trichurids were observed moving abou the prolapsed tissue.

Laboratory Examination.—The hemoglobin co tration was 30 per cent (Sahli); there were 2,30 erythrocytes and 13,600 leukocytes, of which 58 per were neutrophils, 38 per cent lymphocytes and 4 per eosinophils. Repeated blood smears were negative malaria parasites. The urine contained a trace o bumin but no casts or erythrocytes. Ova of T. trich and A. lumbricoides were observed in the stool.

Treatment and Course.—Although all foods were held and fluids administered parenterally, severe diarr blood-streaked stools, persisted. The child twenty-three hours after his admission to the hos

Autopsy Observations.—General Data: The weight was 24 pounds (10.9 Kg.) and length 36 in (91 cm.); moderate emaciation and pallor of the mu membranes were present.

Head: The brain was not examined.

11. Craig, C. F., and Faust, E. C.: Clinical Parasitology, ed. 3, Philadelphia, Lea & Febiger, 1943, p. 241.

12. For purposes of this communication, only pertinent clinical and autopsy observations have been included.

ngs: There were no adhesions between the chest and the surfaces of the lungs. The lungs were grayish pink. All the lobes of the lungs were and crepitant throughout and on section were al in appearance. No gross parasites were found in arenchyma or the main bronchi.

art: The heart was dilated; the pericardium was adherent. The ventricular walls were thin and le. The valves were competent.

ritoneum: The lining of the peritoneal cavity was th and glistening, and no exudate or excess fluid present.

gestive Tract: No parasites were observed in either esophagus or the stomach. One ascarid and a er of trichurids were present in the region of the cal valve. In the cecum and the ascending portion e colon eight masses of trichurids, varying from 2 cm. in diameter, were found. The total number arasites was over 1,700. The mucous membrane e small and large intestines was moderately thick- and congested. In the lower portion of the sig- and in the rectum were several small ulcers, vary- rom 0.5 to 1 cm. in diameter. The mucosa surround- hese ulcerated areas was thickened and congested. rial removed from these areas contained no amebas.

ver: The liver was grayish yellow and soft in stency and extended 1 cm. below the costal margin. on's capsule was intact; the cut surface was yellow fatty in appearance, and the lobular markings were inct. The gallbladder was normal.

leen, Kidneys, Adrenals and Pancreas: Except for r, these organs were normal.

natomic Diagnoses: The following diagnosis was : (1) massive infection with T trichiura, (2) in- n with A. lumbricoides, (3) dilatation of the heart, nteritis and colitis, (5) secondary anemia and (6) iation.

SE 3.—A 7 year old mestizo girl residing in an itated area in the Canal Zone was admitted with omplaints of diarrhea of six weeks' duration and and swelling of the face for five days prior to dmission. The past history and the family history not contributory.

ysical Examination.—The girl was emaciated, list- nd too weak to stand. The temperature was 101 F., ulse rate 130 and the respiratory rate 22 per minute. mucous membranes of the lips were pale; the s and the soles were waxen yellow. A generalized g edema involving the face, the hands, the ab- n and the lower extremities was present. The left r of the heart extended 2 cm. to the left of the avicular line and the right border 1 cm. to the of the sternum; the heart rate was rapid and the s of poor quality; there was a soft systolic murmur ed to the apex; the abdomen was scaphoid in ur; the liver and the spleen were not palpable.

boratory Examination.—The hemoglobin concentra- was 30 per cent (Sahli); there were 2,400,000 rocytes and 14,000 leukocytes, of which 70 per were neutrophils, 27 per cent lymphocytes and 3 ent eosinophils. Repeated blood smears were nega- or malaria. The urine contained a trace of albumin otherwise was essentially normal. The reactions to Kahn and the tuberculin test were negative, and es of stools yielded no pathogens. Roentgeno- ic examination of the chest showed that the lungs essentially normal but that the heart was en- d. The stool was positive for T. trichiura, Necator americanus and A. lumbricoides but negative for E. histolytica.

Treatment and Course.—The patient received three transfusions of blood at intervals of three to four days and one course of treatment with hexylresorcinol. A low grade fever, with a temperature ranging from 100 to 102.6 F., was present throughout the illness. The stools, which averaged six daily, contained mucus but no gross or microscopic blood. The abdomen became moderately distended, and death occurred nineteen days after the patient's admission.

Autopsy Observations.—General Data: The body weight was 24 pounds (10.9 Kg.) and the length 41 inches (104 cm.); the body was emaciated. There was marked pallor of the mucous membranes.

Head: The brain was not examined.

Lungs: There were no adhesions between the lungs and the chest wall. The lungs were soft and pale; the cut surfaces were wet and showed large amounts of pale, frothy fluid; there was no evidence of inflammation. No gross parasites were found in the parenchyma or the main bronchi.

Photograph of the 4,100 trichurids removed from the gastrointestinal tract of the patient in case 3. The vials measured 24 by 80 cm.

Heart: The heart was dilated in situ; the ventricular walls were thin and friable; there was some tigering beneath the endocardium, and the valvular rings were dilated. The coronary vessels were normal in appearance.

Peritoneum: The lining of the peritoneal cavity was smooth and glistening, and no exudate or excess fluid was seen.

Digestive Tract: The intestines were distended. There were no parasites in the esophagus or the stomach. The mucosa of the esophagus and stomach was pale, and the portion in the stomach was covered with a thick layer of mucinous material. Extending from the duodenum to the ileum were 140 uncinarias. From the cecum to the anus a massive infection with T. trichiura was observed. These parasites were found in the appendix as well as in the lower part of the rectum. Some of the parasites were grouped in six or eight masses, measuring from 1 to 2 cm. in diameter. The

mucosa of the large intestine was injected and the wall thickened. There were no ulcers. A total of 4,100 trichurids were removed from the intestine (figure).

Liver: The liver was not enlarged. It was firm and light brown; the free border was rounded, and Glisson's capsule was intact. The cut surface was pale reddish brown; the lobular pattern was distinct, and a moderate increase in parenchymal fat was observed. The gallbladder and the bile ducts were normal.

Spleen: The spleen was normal in size and firm in consistency; the malpighian bodies were not prominent, and no increase in pigment was present.

Kidneys, Pancreas and Adrenals: These organs were pale but otherwise normal.

Anatomic Diagnoses: The following diagnosis was made: (1) massive infection with T. trichiura, (2) infection with Uncinaria, (3) secondary anemia, (4) emaciation, (5) acute cardiac dilatation, (6) pulmonary edema and (7) fatty changes in the myocardium and the liver.

CASE 4.—A 7 year old mestizo girl residing in an unsanitated area in the Republic of Panama was admitted to the hospital with the complaints of shortness of breath, dark red urine and swelling of the face, hands and feet. Approximately four weeks prior to admission to the hospital the patient had had a sore throat, from which she seemed to have recovered. Ten days later her urine became scanty and dark red. Several days after this swelling of the face, hands and feet developed. The child was moderately active until three or four days before admission, when she became drowsy and listless and refused to play. She refused all food and vomited once or twice daily. On the day before admission the patient became stuporous and could not be roused. She was brought to the hospital in that condition.

Physical Examination.—The girl was emaciated, and her breathing was stertorous. She was in a deep coma, from which she could not be roused. The blood pressure was recorded as 160 systolic and 100 diastolic; the pulse rate was 128 and the respiratory rate 24 per minute and the temperature 101 F. There was generalized pitting edema involving the face, hands, abdomen and lower extremities. Pronounced dental caries was present; the breath was foul, the tongue coated, the tonsils hypertrophied and cryptic and the anterior cervical glands palpably enlarged. The left border of the heart extended 1 cm. beyond the left midclavicular line; the right border seemed to be just beyond the right border of the sternum. The heart rate was rapid; the sounds were muffled and of poor quality, and no murmurs were audible. Numerous rhonchi were heard over both lungs anteriorly and posteriorly. The abdomen was distended; the liver and spleen were not palpable.

Laboratory Examination.—The hemoglobin concentration was 30 per cent (Sahli); there were 2,300,000 erythrocytes and 13,700 leukocytes, of which 69 per cent were neutrophils, 27 per cent lymphocytes and 4 per cent eosinophils. Repeated thick and thin blood smears were negative for malaria parasites. The urine contained a heavy trace of albumin and numerous erythrocytes and granular casts. A Kahn test of the blood gave a negative reaction. The serum nonprotein nitrogen and creatinine were 120 and 6.2 mg. per hundred cubic centimeters respectively. Cultures of stools yielded no pathogens; no amebas were found. The guaiac test for blood gave a positive reaction, and numerous ova of T. trichiura were observed.

Course.—Death occurred thirty hours after her admission to the hospital.

Autopsy Observations.—General Data: The b weight was 40 pounds (18 Kg.) and the length 40 in (102 cm.). Generalized edema of the face, hands, domen and lower extremities as well as moderate pa of the mucous membranes were observed.

Head: The brain was not examined.

Lungs: There were no adhesions between the lu and the chest wall. The lungs were pale; the surfaces were wet and showed large amounts of p frothy fluid. There was no evidence of inflammati No gross parasites were found in the parenchyma the main bronchi.

Heart: The pericardial sac was not adherent contained 100 cc. of clear, straw-colored fluid. T heart was dilated. The ventricular walls were thin; myocardium was soft and friable, and the valves w competent.

Peritoneum: The peritoneal lining was smooth glistening. The abdominal cavity contained 250 cc. a clear, straw-colored fluid.

Digestive Tract: The mucosa of the esophagus stomach was normal in appearance; there were parasites in the stomach. The small and the large testine were distended. The mucosa of the small in tine was normal in appearance; Peyer's patches w not unusually prominent, and no ulcerations were no Scattered throughout the large intestine, especially the sigmoid, were small clumps of trichurids. A t of over 400 worms were removed. The mucous me brane was normal in appearance, and no ulcerati were observed.

Liver: The liver was grayish brown, smooth firm. The cut surface was light brown, and the bili passages were normal in appearance.

Spleen: The spleen was dark red and normal in and consistency; on cut section, the malpighian bo seemed prominent, but no increase in pigment observed.

Adrenals and Pancreas: Aside from marked con tion, these organs appeared normal.

Kidneys: The kidneys were enlarged, soft and gra red. The capsules were tense, and when they were renal substance bulged through the openings. The ternal and cut surfaces were smooth, and a reddish f dripped from the cut surfaces. The cortices measu 10 mm. in thickness.

Anatomic Diagnoses: The conditions observed w diagnosed as (1) acute hemorrhagic nephritis, (2) m sive infection with T. trichiura, (3) pericardial effusi (4) abdominal ascites, (5) dilatation of the heart (6) secondary anemia.

COMMENT

According to Faust,[13] "the worm burden the average individual is usually low (4 to worms) and the clinical effects compara slight." A not inconsiderable number of childr with severe trichuriasis in Panama have p lapse of the rectum, and that number of wor (4 to 12) have been observed moving ab on the prolapsed tissue alone. Although number of trichurids carried by older child

13. Faust, E. C.: Diseases Due to Helminths Arthropods, in Brennemann, J.: Practice of Pediatr Hagerstown, Md., W. F. Prior Company, Inc., vol. 2, chap. 35, p. 19.

dults here or elsewhere may be relatively , young children in Panama seem to be heavily infected. Some of these children been examined proctoscopically, and it has observed that the entire wall of the lower on of the descending colon and the sigmoid covered with an almost continuous moving of trichurids, so that the mucosa was visible in spots. The numbers of worms found e present group of 4 cases were 1,100, 1,700, and 400 respectively. Except in case 4, parasites were present also, so that the worm burden was unusually heavy.

e distribution of parasites in this group cases was as follows: T. trichiura, 4 cases; mbricoides, 3 cases, and N. americanus, S. oralis and E. histolytica, 1 case each. The nt described in case 1 was infected with all of these parasites. At autopsy E. histolyt- uncinarias and over 1,100 trichurids were ved in the gastrointestinal tract. Ascaris ricoides and S. stercoralis apparently dis- ared during the five day period of hospitali- n. It seemed reasonable to conclude, there- that the ascariasis, the strongyloidiasis and ncinariasis were relatively mild infections did not contribute materially to the death is child. Amebiasis may have been an rtant factor, although there was no doubt trichuriasis was by far the predominating ion. In case 2 only 1 ascarid was found. presence of that isolated parasite did not nt for the severe symptoms observed in hild or for her death, twenty-three hours her admission to the hospital. The child se 3 had uncinariasis, ascariasis and trich- is. Only one dose of vermifuge was admin- d before death occurred. At autopsy 140 arias but no ascarids were found. Infec- with the latter obviously was not heavy, was eliminated completely by one course eatment. The hookworm infection seemed e enough to be responsible, in part at least, he symptoms observed, and may have con- ted to the death of the child. Only 1 patient 4) was infected with a single parasite, unfortunately, the clinical picture was ob- d by acute hemorrhagic nephritis. Although itis was the primary cause of death, the tating effect of the heavy infection with ichiura on the general health of this child t be dismissed.

e symptoms and signs of massive infection T. trichiura have been compared with those ere hookworm disease.[11] The case of acute rrhagic nephritis (case 4) must be ex- d, but the remaining 3 cases illustrate this point well. The most important symptoms observed were diarrhea, blood-streaked stools, weakness and loss of weight. Pallor, fever, emaciation, tachycardia, cardiac enlargement, abdominal distention and anemia were observed in all of the cases. In 1 case prolapse of the rectum occurred. The hemoglobin concentration in these 4 cases averaged 30 per cent; the number of erythrocytes ranged from 2,100,000 to 2,400,000, and eosinophilia in excess of 4 per cent was not present.

At autopsy evidences of anemia were pronounced. The most striking finding was the cardiac enlargement observed in all of the patients. Pulmonary edema occurred in 2 of the children. Although trichurids ordinarily inhabit the cecum, the appendix and the terminal part of the ileum, the findings in the gastrointestinal tract of this group of 4 patients indicated that these parasites when present in large numbers may invade the full length of the large intestine. As stated before, the parasites were observed repeatedly in the rectum and the sigmoid, with the aid of the sigmoidoscope, and on the exposed rectal mucosa when prolapse of the rectum occurred. No characteristic lesions were found in the gastrointestinal tract. Some degree of thickening and congestion of the mucous membrane of the small and the large intestine and in 1 patient (case 2) several small ulcerated areas in the lower portion of the sigmoid and rectum were observed. This paucity of findings was surprising in view of the fact that the necks of many of the parasites were sewed through small segments of the mucosa like basting threads. Ross [14] removed a trichurid with forceps on sigmoidoscopic examination and found a collar of intestinal mucosa around the neck of the worm.

Trichuriasis is usually considered a mild disease. Yet massive infection can seriously undermine general health and can cause serious symptoms. Although 1 of the patients reported on in this paper (case 4) died from causes unrelated to trichuriasis, the effects of the parasitic infection cannot be discounted completely. In case 1 the helminthic infection was out of all proportion to the protozoan infection, although amebiasis probably contributed to the fatal outcome. Uncinariasis may have been a contributing factor in case 3. In case 2 there was no apparent cause other than trichuriasis. All of the patients had anemia, and 3 of them had diarrhea extending over a prolonged period. It seems certain that prolonged diarrhea and anemia may eventuate

14. Ross, F.: Chronic Diarrhea Due to Trichocephalus Trichiuris, Lancet **2**:97-98, 1942.

in cardiac failure and death. However, the role of massive infection with T. trichiura in the production of anemia remains unexplained.

SUMMARY

Massive infection with T. trichiura was observed in 4 children. Death occurred in every case.

The pathologic changes of severe trichu
are serious.

Three of the patients had prolonged diar
Emaciation, anemia and cardiac dilatation
observed in all of the patients. Although an
was an important feature in each case, the m
anism of its causation is not clear.

MMUNITY RESPONSE OF MOTHERS AND BABIES TO INJECTIONS OF PERTUSSIS VACCINE DURING PREGNANCY

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has long been a matter of common observa- that, although newborn babies have a high ee of resistance to such childhood diseases easles, scarlet fever and diphtheria, they ar to be susceptible to whooping cough from day of birth. Pertussis in the newborn is cially severe, and fatality rates are highest abies under 6 months of age. According to er,[1] in the period 1935 to 1939, 40 per cent he deaths from whooping cough in the istration Area were of babies under 5 months ge. This high proportion of deaths is of icular significance in view of the low inci- e of the disease in this age group. Resistance carlet fever, measles and diphtheria is gen- y explained on the basis of a passive im- ity acquired by way of the placenta, this unity, of course, being gradually lost during first few months of life. Since women of -bearing age could be expected to have unity to pertussis of the same order as that ther childhood diseases, it is difficult to ain the apparent lack of immunity to ssis in the newborn.

1941 and 1942, Mishulow and her co- kers[2] studied pertussis antibodies in pregnant en. They demonstrated protective antibodies 1 per cent of the women tested, while utinins and complement-fixing antibodies were present in 13.7 and 6.8 per cent respectively. After a series of injections of pertussis vaccine, all of the women had protective antibodies, and most of them showed agglutinins and complement-fixing antibodies. The results suggested that in general these women had a relatively low level of circulating antibodies to pertussis but that the level was raised rapidly by injections of vaccine. No information on the babies of these women was given in the report. Bradford and Slavin[3] studied the opsonocytophagic reaction to Hemophilus pertussis in 20 mothers and their babies during the first ten days of the babies' lives. They found that in general the titer of the mother's blood was greater than that of the baby's blood and, also, that when the mother had a history of whooping cough the degree of phagocytosis was greater in the blood of both mother and baby. Their results suggested that placental transfer of pertussis antibodies does occur. Placental transfer was also indicated by the work of Cohen and Scadron,[4] who compared circulating and mouse-protective antibodies in the serums of 29 immunized mothers and their babies with those of 9 nonimmunized mothers and infants.

PLAN AND METHODS OF STUDY

In the present study it was planned to obtain further information on the placental transfer of circulating antibodies to pertussis by comparing the opsonocytophagic reactions of two groups of mothers and their newborn babies. The women of one group were to be given a series of injections of pertussis vaccine during the latter months of pregnancy, in order to raise the level of immunity, while the second group were to receive no vaccine. The women of both groups were to be tested before parturition and the mothers and their babies soon after delivery. The opsonocytophagic reaction was chosen as a measure of circulating antibodies, since it has

om Michigan Department of Health, Bureau of ratories, Western Michigan Division.

he medical staff and officers of the Evangeline e, especially Miss Grace Langenberg, supervisor rses, gave cooperation throughout the study. The Committee on Evaluation of Administrative Prac- of the American Public Health Association gave ial aid, as did the Bureau of Maternal and Child h, Michigan Department of Health. Mrs. Jose- Misner gave technical assistance throughout the

1. Dauer, C. C.: Reported Whooping Cough Mor- and Mortality in the United States, Pub. Health 58:661-676 (April 23) 1943.

2. Mishulow, L.; Wilkes, E. T.; Liss, M. M:; Lewis, erkey, S. R., and Leifer, L.: Stimulation of Per- -Protective Antibodies by Vaccination, Am. J. Dis. 62:1205-1216 (Dec.) 1941. Mishulow, L.; Leifer, herwood, C.; Schlesinger, S. L., and Berkey, S. R.: ssis Antibodies in Pregnant Women, ibid. 64:608- Oct.) 1942.

3. Bradford, W. L., and Slavin, B.: The Opsonocytophagic Reaction of the Blood in Pertussis, J. Clin. Investigation 16:825-828 (Sept.) 1937.

4. Cohen, P., and Scadron, S. J.: The Placental Transmission of Protective Antibodies Against Whooping Cough, J. A. M. A. 121:656-662 (Feb. 27) 1943.

been shown by Kendrick, Gibbs and Sprick,[5] Bradford and Slavin,[3] Singer-Brooks and Miller [6] and others to be a simple, reproducible and sensitive test of response to injections of vaccine and to the disease itself.

Study Group.—Through the cooperation of the Evangeline Home of Grand Rapids, permission was obtained to carry out the study in that institution. This arrangement was particularly suited to our purpose, since the patients, for the most part young unmarried women, usually entered the Home several months before the birth of their babies, an interval which allowed sufficient time for opsonic tests and injections of vaccine. Ninety-nine women, ranging in age from 12 to 32 years, comprised the study group. Of these, fifty-seven were given injections of pertussis vaccine, while 42 were left unvaccinated. The histories as to infection with pertussis were unreliable and were disregarded. Few of the women were unwilling to receive the injections of vaccine, and the division into vaccinated and nonvaccinated groups was made largely on the basis of the time with respect to pregnancy at which the women entered the Home. It was planned to complete the injections of vaccine about one month before the birth of the baby. Therefore, if delivery was expected within six weeks, vaccine was withheld.

Method of Immunization.—The vaccine was prepared by the Biologic Products Division of the Michigan Department of Health and was a 10,000,000,000 per cubic centimeter suspension of H. pertussis bacilli, killed and preserved with a 1: 10,000 solution of merthiolate. Three injections, of 0.5, 1 and 1 cc., respectively, were given subcutaneously at weekly intervals.

Opsonocytophagic Tests.—The opsonocytophagic reactions were determined in the manner described in a previous report.[5] Briefly, the test was made by obtaining 0.1 cc. of blood from the finger, or, in the babies, from the heel or the great toe, as for a blood count, and thoroughly mixing it with 0.02 cc. of 4 per cent solution of sodium citrate in a small test tube. The citrated blood was taken to the laboratory, and to it was added 0.1 cc. of a 20,000,000,000 per cubic centimeter suspension of merthiolate-killed H. pertussis bacilli. The mixture was agitated and then incubated at 37 C. for half an hour. Slide preparations were made as for differential counts and were stained with Hastings' stain. Twenty-five polymorphonuclear cells were examined microscopically and the cells recorded on the basis of the number of H. pertussis bacilli phagocytosed. The ranges recorded were 0, 1 to 5, 6 to 20, 21 to 40 and 41 or more organisms per neutrophil. These ranges were assigned arbitrary factors of 0, 1, 3, 8 and 12 respectively, and the product of the number of cells in each range times the factor were calculated. The sum of these products represented the opsonic titer, or reaction, of the blood. The possible variation of these products was from 0 to 300. For purposes of evaluation and comparison, they were divided into negative to weak, weak to moderate, moderate to strong and strong reactions, covering the ranges 0 to 50, 51 to 100, 101 to 200 and 201 to [illegible] respectively.

Time of Tests.—Opsonic tests were made on [illegible] mothers at the time of our first visit after their admis[illegible] to the Home. The women chosen for vaccination w[illegible] given their first injection at the same visit, after [illegible] blood for the opsonic test had been obtained.

Soon after the birth of a baby, opsonic tests were m[illegible] on both the baby and the mother. The average age [illegible] the babies in both groups at the time of testing was [illegible] days; the average age of babies of immunized moth[illegible] was 10.9 days, and that of babies of nonimmuni[illegible] mothers, 15.6 days. The median ages for immunized [illegible] nonimmunized babies were 10 and 11 days respectiv[illegible]

RESULTS

The pertussis opsonocytophagic reactions [illegible] immunized and nonimmunized women and th[illegible] babies are shown in table 1. The reactions [illegible]

TABLE 1.—*Pertussis Opsonins in Immunized and N[illegible] immunized Mothers and Their Babies*

Groups According to Immunization	Number in Each Range of Reacti[illegible]			
	0-50	51-100	101-200	201-
57 immunized women				
Before immunization....	5	23	24	[illegible]
After immunization.....	1	3	14	[illegible]
Their babies.....	10	11	20	[illegible]
42 nonimmunized women....	9	12	16	[illegible]
Their babies.....	27	11	4	[illegible]

* Opsonic reactions of 0 to 50 are classified as negativ[illegible] weak; those of 51 to 100, as weak to moderate; those of [illegible] 200, as moderate to strong, and those of 201 or more, as str[illegible]

rated according to the scheme already descri[illegible] Similar results were observed for the 57 wom[illegible] selected for immunization before they were [illegible] munized and for the 42 women who compri[illegible] the nonimmunized group. The reactions of [illegible] per cent of each group were in the negative

TABLE 2.—*Pertussis Opsonins in Immunized Pregnant Women*

Before Immunization		After Immunization Number in Each Range of Reaction			
Number	Range of Reaction	0-50	51-100	101-200	201-
5	0- 50	..	..	2	[illegible]
23	51-100	..	2	8	[illegible]
24	101-200	..	1	4	[illegible]
5	201-300	1	..	..	[illegible]
57	All	1	3	14	[illegible]

weak and the weak to moderate ranges, and [illegible] other 50 per cent had moderate or strong re[illegible] tions. The injections of vaccine were follo[illegible] by a considerable rise in opsonic titer. The re[illegible] tions of only 4 of the women were in the nega[illegible] to weak and weak to moderate ranges a[illegible] receiving vaccine, in contrast to 28 with reacti[illegible] in this range before immunization. Four[illegible] and 39 women gave moderate and strong re[illegible] tions, respectively, and together these made [illegible] 93 per cent of the total group. As indicated

5. Kendrick, P.; Gibbs, J., and Sprick, M.: The Opsonocytophagic Test in the Study of Pertussis, J. Infect. Dis. **60**:302-311 (May-June) 1937.

6. Singer-Brooks, C., and Miller, J. J., Jr.: The Opsonocytophagic Test in Children with Pertussis and in Children Vaccinated with H. Pertussis Antigens, J. Clin. Investigation **16**:749-761 (Sept.) 1937.

table, the babies of immunized mothers had
h higher reactions than did those of non-
nunized mothers, but in both groups the
es had lower reactions than their mothers.

*regnant Women Before and After Receiving
cine.*—A tabulation of the pertussis opsonic
s of the women before and after injections
accine shows a pronounced rise in 45 of the
women, or 80 per cent, of the group. The
of 10 remained in the same range, while 2
wed lower reactions after receiving vaccine.
of the 2 cases in which the titer was lower
of particular interest, since the patient was
iving massive doses of a sulfonamide com-
nd at the time the test was made. Whether
not the drug had the effect of lowering the
onic titer we had no way of determining.

mmunized Mothers and Their Babies.—The
in table 3 show in greater detail the com-
ison of opsonic titers of the 57 immunized
hers and their babies. In general the titers
the babies varied with the titers for their
hers, but were lower, the average titer of the
ies being 141 and that of their mothers 214,
atio of 1:1.5. In other words, the babies
two-thirds the opsonic activity of their
hers. The babies' reactions varied from 21
284 and the mothers' from 19 to 300. The
e shows that only 1 mother had a negative to
k reaction, the patient who was receiving
onamide therapy. The reactions for 10 babies
e in this low range. Three mothers and 11
ies had reactions classified as weak to moder-

LE 3.—*Pertussis Opsonins in Immunized Mothers and Their Babies*

Mothers		Their Babies Number in Each Range of Reaction			
mber	Range of Reaction	0-50	51-100	101-200	201-300
1	0- 50	1	..	..	..
9	51-100	1	2	..	..
4	101-200	4	4	6	..
9	201-300	4	5	14	16

In the range of strong reactions were 39
hers and 16 babies.

With regard to the time intervals in this group,
e was considerable variation, but the average
mber of days from the administration of the
dose of vaccine to the birth of the baby was
nty-four. The babies' ages at the time they
e tested varied from 6 to 29 days, with an
rage of 11 days and a median of 10 days.
ted differently, the average number of days
m the last injection of vaccine to the testing
mother and baby was thirty-five.

Nonimmunized Mothers and Their Babies.—
the group of nonimmunized mothers and their
ies the same general relationship in opsonic reactions is found. The average titer of the babies was 48 and that of the mothers 105, a ratio of 1:2.2. The reactions of 9 of the mothers were in the negative to weak range and those of 12 in the weak to moderate range, while of the babies 18 and 11, respectively, had reactions in these classifications. Sixteen of the mothers and 4 of their offspring had moderate reactions, while 5 mothers and none of the babies had strong reactions. The average age of the infants at the time of testing was 17 days and the median age 11 days.

If one refers to the data of tables 3 and 4 and compares the average opsonic reactions of the nonimmunized and the immunized groups, one finds the ratio for the mothers to be 1:2 and that for the babies 1:2.9. The immunized mothers showed twice the opsonic activity of the nonimmunized women, while the babies of vaccinated mothers had approximately three times the opsonic activity of the babies of the nonimmunized group.

TABLE 4.—*Pertussis Opsonins in Nonimmunized Mothers and Their Babies*

Mothers		Their Babies Number in Each Range of Reaction			
Number	Range of Reaction	0-50	51-100	101-200	201-300
9	0- 50	0	..	..	..
12	51-100	10	2	..	..
16	101-200	7	8	1	..
5	201-300	1	1	3	..

Other Tests.—In addition to the opsonocytophagic tests, agglutination and complement fixation tests for H. pertussis were carried out on some of the group. The difficulty of obtaining sufficient blood from the newborn babies made it impossible to perform these tests on the entire group. In the results obtained, there was no striking correlation among the three tests, but they all did indicate response to the injections of vaccine.

COMMENT

The data presented indicate that circulating antibodies for H. pertussis may be present in the blood of a newborn baby and that these bear a quantitative relationship to the antibody titer of the mother. The comparisons between immunized and nonimmunized mothers and their babies give strong evidence of placental transfer. These observations give rise to speculation on several points. The opsonic reactions of the nonimmunized mothers were generally low, and those of their babies were even lower. Perhaps the lack of immunity to whooping cough in the newborn may be explained on a quantitative basis; that is, the level of immunity in mothers is generally too

low for effective protection of their offspring. Conclusions on this basis cannot be made, since it is not known what correlation there is between opsonins and protection. Mouse protection tests using serum of the newborn would add valuable information on this point. From the practical standpoint, the results of the study suggest the value, under certain conditions, of giving a series of injections of pertussis vaccine to pregnant women in order to raise the level of immunity in their babies.

SUMMARY

Data have been presented on opsonocytophagic reactions to H. pertussis of 99 pregnant women, of whom 57 were immunized with pertussis vaccine and 42 were nonimmunized. A pronounced rise in opsonins was observed after injections vaccine. The ratio of the average opsonic tion of nonimmunized to that of immuni women was 1:2. The opsonins of the bab were of a lower titer than those of their mothe the ratio of the titers of the babies to those their nonimmunized mothers was 1:2.2, and corresponding ratio for the immunized gro was 1:1.5. With respect to the babies, the r for nonimmunized to immunized group w 1:2.9. These results indicate that placen transfer of pertussis circulating antibodies d occur and that the higher the level in the moth the more nearly does the titer of her ba approach her own.

Bureau of Laboratories, Michigan Department Health, (3).

Case Reports

CONGENITAL THROMBOPENIA

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ngenital thrombopenia of the newborn is of occurrence. We wish to report a case the ual aspect of which is the absence of any uric tendency in the mother.

he sparse literature on congenital thrombo- was reviewed by Sanford, Leslie and e[1] in 1936; it revealed 12 cases, in all of h the mothers had purpuric tendencies. e cases had all been reported from the tric viewpoint. In the case reported by ord and associates, the thirteenth, there was sitive family history for purpura. The er and the grandmother had had a similar The fourteenth case, reported by David- in 1937, was that of an infant whose mother proved purpura, as observed from her nth year. The mother required splenec- . The fifteenth and sixteenth cases were ted by Whitney and Barritt.[3] The infants consecutive sons of a mother who had had d thrombopenic purpura since her four- h year. The seventeenth and eighteenth , reported by Urbanski and Hutner,[4] were of consecutive children of a mother who a purpuric tendency. The first was still- ; the second was delivered after the mother been splenectomized.

he infant in the case reported by Sanford associates required no treatment. The infant avidson's case was treated with transfusions antivenin and did well. The first infant ted on by Whitney and Barritt (case 2) given blood intramuscularly, but death, from cranial hemorrhage, occurred on the third The second infant (case 3) died twenty- hours after birth, despite transfusions of d, administration of preparations of vita- K and supportive measures. The first of infants whose cases were reported by Urbanski and Hutner was stillborn and had petechial hemorrhages. The second child showed petechiae on the face, with a platelet count of 23,000. He did well after transfusion.

REPORT OF A CASE

D., a girl, was delivered spontaneously by one of us (A. S.) at full term on Jan. 13, 1944 at 4: 58 a. m. Her weight at birth was 4 pounds 6 ounces (1,984 Gm.). She was of good color and had a fairly strong cry. It was immediately noticed that there were small purplish spots on the infant's left cheek. One hour later there were hundreds of these spots over the entire face and scalp and fewer over the upper part of the chest and the back. There were only occasional spots over the abdomen and the extremities.

Two hours after the infant's birth 0.5 cc. of menadione was administered by injection, although the patient did not seem ill. Six hours later it was noted that there was bleeding from the cord, and a third tie was applied. The cord continued to bleed, and a second dose of menadione was administered.

Twelve hours after birth the infant seemed well. Her color was good. She was well formed, and no anomalies were noted. Purpuric spots were present in the areas already mentioned in the same distribution and density. They were 2 to 4 mm. in width, rounded, purplish and slightly raised. There was moderate bleeding from the cord. The mucous membranes were devoid of spots. It was the opinion of the nurse in charge that no new crop of spots had appeared since morning. The spleen was not palpable. The liver was palpable at the costal margin. The abdomen was soft. There was no vaginal discharge.

A blood count made at this time showed a hemoglobin concentration of 114 per cent. The red cell count was 4,200,000 and the white cell count 19,000, with 60 per cent polymorphonuclear leukocytes and 40 per cent lymphocytes. The bleeding time was two minutes and the coagulation time four minutes. There were 52 normoblasts per hundred white blood cells. The platelet count was 67,200 per cubic millimeter.

Because of the infant's good condition no transfusion was thought necessary, but 10 cc. of whole blood was given intramuscularly. Whole blood drawn at this time showed that clot retraction was complete at two hours. Bleeding from the cord ceased shortly.

On January 15, two days after the baby's birth, the blood picture showed 118 per cent hemoglobin and 4,050,000 red blood cells.

On January 17, four days after the infant's birth, the platelet count was 48,600 per cubic millimeter.

On January 22, nine days after the baby's birth, the platelet count was 133,650, with hemoglobin 88 per cent, bleeding time one minute and coagulation time three minutes. Roentgenograms of the long bones were normal.

On January 21 examination of the mother's blood revealed a bleeding time of one minute, a coagulation time of four and one-half minutes and a platelet count

Sanford, H. M.; Leslie, E. I., and Crane, M. M.: enital Thrombocytopenia, Am. J. Dis. Child. **51:** (May) 1936.

Davidson, L. T.: Congenital Thrombocytopenia, J. Dis. Child. **54:**1324 (Dec.) 1937.

Whitney, L. H., and Barritt, A. S., Jr.: Spon- us and Hereditary Thrombocytopenic Purpura in other and Two Sons, Am. J. Dis. Child. **64:**705) 1942.

Urbanski, A. X., and Hutner, C. I.: Thrombo- Purpura Complicating Pregnancy, J. A. M. A. 754 (Nov. 7) 1942.

of 723,000 per cubic millimeter. The Wassermann reaction was negative. A test showed that the mother's blood was Rh positive.

The infant did well throughout her stay in the hospital, weighing on her discharge 4 pounds 9 ounces (2,070 Gm.). There was no repetition of the bleeding, and the spots began to fade rapidly.

On February 25, at 6 weeks of age, the patient was recalled for examination of the blood, which revealed 67 per cent hemoglobin, 2,940,000 red blood cells, 10,400 white blood cells, a bleeding time of two minutes, a coagulation time of four minutes and 497,000 platelets per cubic millimeter. At this time many spots were still present, although faded and discolored. The patient was gaining well and seemed content with her formula.

COMMENT

In each of the 18 cases of congenital thrombopenia reported in the literature to date, there has been noted in the mother either a definite tendency to bleeding or a positive history of thrombopenia as proved by test, necessitating in most cases a final splenectomy.

This case is unusual in that the mother at no time exhibited a tendency to bleeding, nor did examination of the blood reveal the possibility of latent purpura.

Unfortunately, no determination of prothrombin time was made on the infant at birth. A diagnosis of hemorrhagic disease of the newborn is not, as Whitney and Barritt stated,[3] at all likely, because of the "spontaneous and immediate appearance of hemorrhagic phenomena."

The course in this case followed closely that in the case reported by Sanford and associates, with little general disturbance and rapid improvement. Treatment consisted only of intramuscular injections of blood and of menadione, for control of umbilical bleeding.

It is interesting to note the conclusion of Sanford and associates that their patient evidently had a variable platelet count because without further treatment of any kind it rose to almost normal values. They assume that probably many more such families exist than one realizes. I ing debility or strain, such as in the stres delivery, the increased power of disintegra of the platelets may be lost, with the resu occurrence of hemorrhage.

Of particular interest in the blood pictur the presence of 52 normoblasts in the count taken. Schwartz and Büngeler[5] gave average as 1 to 1.5 nucleated red cells to leukocytes, with in 1 instance a count of normoblasts, in the normal newborn. Bec of this high count and despite the absence jaundice, anemia or edema, the Rh factor determined for the mother. No attempt made to determine the Rh factor for the c We are of the opinion that erythroblastosis definitely be ruled out because of the ge condition of the child, the tendency to e bleeding and the low platelet count. The pla counts, of 67,200 per cubic millimeter at b and 48,600 per cubic millimeter three days l are well under the 100,000 figure, which thought to be the danger line. The possib that increased fragility of the platelets may prevented further bleeding is to be kept in m

SUMMARY

The present case of congenital thrombope with petechiae and a low platelet count unusual in that examination of the moth blood showed no tendency to purpura. Th was no known family history of the disease.

No report of a case of congenital thro penia has appeared in which the mother did have thrombopenic purpura.

261 Main Avenue.

235 Lexington Avenue.

5. Schwartz, P., and Büngeler, W.: Die Geburt des Blutbildes bei Neugeborenen, München. med. W schr. **74**:1822 (Oct. 28) 1927.

LIPODYSTROPHY WITH INVOLVEMENT RESTRICTED TO THE FOUR EXTREMITIES

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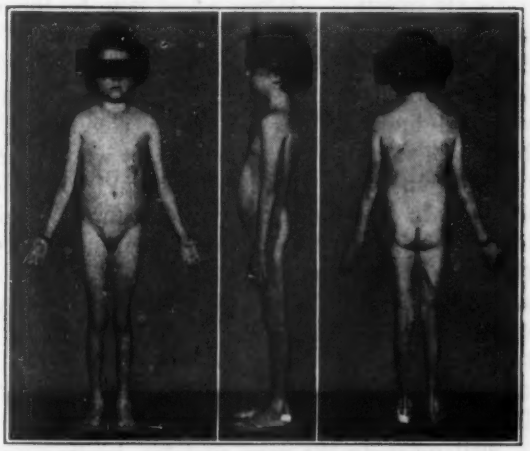
This case is reported for the purpose of adding the literature on lipodystrophy an example ch demonstrates that the areas affected need conform to the original description of Bar- ner and Simmons. Their conception of the rder was that it characteristically involves face, neck and shoulder girdle and occasion- more or less of the trunk. In cases described sequently, the involvement conformed to this ribution till in 1939 Bigler[1] reported the of an 18 year old girl which satisfied all the nostic criteria except that the loss of sub- neous fat was confined to the legs, below the es. Since then there have been reported a other cases in which the lower extremities ly were involved.

REPORT OF A CASE

he patient was a 5½ year old girl, whose progress normal in all respects till she reached the age of ar. A photograph of her taken at that time showed ral plumpness. Soon thereafter her mother noticed she was not eating as heartily as before; she failed ain weight for a few months, and her extremities ed to be getting somewhat thin. Otherwise she no observable illness. Because her abdomen was ively large, she was treated for celiac disease for e months. Later this diagnosis was discarded, and er family moved to various localities on the west t, she was studied in several offices and clinics for r forms of malnutrition, but no abnormal laboratory es or other significant conditions were disclosed, no definite name was attached to her condition. was treated with various diets and extra vitamins, out any appreciable effect. For a year before she seen in my office she had had no special medical

Aside from being a "small eater" and having a rather irritable temperament, she was apparently healthy and normal in every way. The thinness had been stationary since about 18 months of age.

An office examination, including blood counts and urinalysis, revealed nothing at all abnormal, except that starting with the buttocks there was an entire lack of subcutaneous fat on the legs and that the same condition obtained on the arms, beginning just below the shoulders. The face, neck and body were plump. Her



The patient at 5½ years. Note the lack of subcutaneous fat on the legs and arms.

height was 45¾ inches (115 cm.), and her weight was 43 pounds (19.5 Kg.) (about 3 pounds [1.3 Kg.] under average).

In many of the cases reported, including Bigler's and 1 studied by Harris and Reiser,[2] the loss of fat followed an illness. In this respect also the present case is unusual.

267 South Beverly Drive.

1. Bigler, J. A.: Loss of Subcutaneous Fat of the er Extremities (Lipodystrophy), J. A. M. A. **112:** 628 (Feb. 18) 1939.

2. Harris, J. S., and Reiser, R.: Lipodystrophy: Report of Case with Metabolic Studies, Am. J. Dis. Child. **59:**143-166 (Jan.) 1940.

Progress in Pediatrics

PREVENTIVE CARE OF INFANTS AND CHILDREN

I. THE FIRST POSTNATAL FAMILY INTERVIEW

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Some one has told the story of a man who was asked by a stranger in his community, "How do you find people to be in your city?" The stranger in turn was asked. "And how do you find people to be in the city from which you came?" He answered, "The people in the city from which I came are mean, vile and unfriendly. The townsman replied, "That, dear sir, is the way you will find them to be in our community." Shortly, another stranger came by and asked the same question. When asked how he found people to be in his home town, he answered, "I find them to be kind and good and friendly." Once more the reply, "That, dear sir, is the way you will find them to be in our community." How will it be with the new baby who comes to grow up in a strange world? Will he find in his own little community, constituted of his immediate family, their friends, their neighbors, their household employees and their relatives, an environment which accepts him graciously, treats him kindly and affords him security and happiness, or will he find an environment in which he is unwelcome, insecure and unhappy? Even if he is welcome and his little community is well meaning, he may find his environment charged with uncertainty, unhappiness and disagreements about his care. Consequently, at first subconsciously, then consciously, he comes to feel either, as did the first stranger, that the world and its people are all wrong or, as did the second stranger, that the world is pleasant and its inhabitants kind, good and friendly.

I observed in my private practice that this first community pattern could best be shaped by an early and comprehensive interview with the persons who constitute the infant's first community. After such a conference, problems arising in the group were few and easily approached. On the other hand, if such a meeting was not held, problems were numerous, varied and much more difficult to meet.

The purpose of this paper, therefore, is to relate one technic of conducting a first postpartum group visit. The rationale, the possi preventive effects and the need for expand this type of program throughout childhood a adolescence will be emphasized. The empha placed on detail is based on the premise t proper instruction prevents many proble together with their physical and mental devel mental hazards. Controversy between memb of the group regarding care of the baby, e though over trivialities, becomes important that such an environment, directly or indirec creates a sense of insecurity in the baby. F the present purpose, it will be assumed that the mother's last day in the hospital where was confined she was given preliminary instr tions in care of the baby. Furthermore, arran ments were made with her to have the physic visit the home sometime during the follow day or evening. She was requested to h present all persons interested in the baby, cluding the household employees and the r tives, particularly the father. She was structed also to list the questions that w arise concerning the care of the baby on first day at home.

BY WAY OF INTRODUCTION

At the first interview, a few general rema are made to the group. Each member is m to feel that he is a welcome part of the n baby's first environment. If this is done and persons concerned are made to understand ev objective, they are usually cooperative, incl ing the grandmothers, who have had too m berating. It is quite possible that the gra mothers have been as badly misunderstood their grandchildren. Indeed, aunts, ma grandfathers and even fathers can be just troublesome.

An effort is made to help the members the group realize that the new baby is, to great extent, at their mercy and that the ob is not to fit his life into a rigid mold pre ceived by any one. Such an effort is a fa in creating a feeling of security, so essenti the child is to develop to his own optimum.

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p is reminded that repeated attempts are e to force some children beyond their level nfolding behavior patterns, with resultant rrent failure of achievement. Other chil- are repeatedly blocked from unfolding at potential level. Some are alternately ked and forced. It is emphasized that these rs tend to lead to frustration, insecurity, appiness, inferiority complexes and ineffi- cy. The purpose, it is explained, is to urage and help the child to unfold to a imum degree at his particular level but never nd it. The child demonstrates his particular of unfolding by his spontaneous behavior. example, when the infant spontaneously to feed himself or dress himself, he should ncouraged to do so, no matter how crude efforts, but it is important that he first nstrate that he is unfolding at that par- ar level, so that he is neither blocked nor d. It is pointed out that probably no one ever been permitted even to approach the of maximal unfolding for himself but that ttempt to help the new generation approach ould be made. It is suggested that instead easuring success in terms of how well one on performs in comparison with another it t be better to measure it in terms of how and how happily the person performs as pared with how well and how happily he t have performed. This is another way of g that success should not be considered rms of material or intellectual accomplish- t without regard to inner well-being. Some ons achieve apparent success at terrific ex- e to their nervous systems, and these sses are probably factors in some of the honeurotic and psychosomatic disorders en- tered in later life. Therefore, the attempt ade, it is explained, to allow an individual velop who will approach the optimal fulfil- of his hereditary endowment, intellectually, ionally and physically, and who will then back to the world his best contribution mplete, happy adjustment to his fellowmen.

y the very nature of the objective, then, baby must be handled as a unique indi- al. The concern will not be with the new 's given level of development as compared another's but will be only with his actual al, emotional and physical development as sured against what is felt to be his optimal ntiality. It follows, then, that methods used earing another child may not apply to this cular infant. It may also be said that the ments made in the many valuable books nfant care may all be true and yet may not to the baby in question. It can be said, further, that there may be many right ways to handle a given situation but the results for the baby may be bad if too many right ways are tried at once, in rapid sequence or at the wrong time.

Finally, in the introductory talk to the group, it is emphasized that the period just after birth is probably the most important time to stabilize the environment in a manner favorable to the infant's optimal development. This will become more apparent as the discussion proceeds. If one is to direct a preventive pediatric program most effectively, one needs to be constantly reminded that details are important and that what seems obvious to the director is often nebulous and controversial to the group.

PREPARATION OF THE FORMULA AND THE TECHNIC OF FEEDING

The interview is continued in the kitchen, unless the infant is breast fed, with actual preparation of an evaporated milk formula. The nipples are examined, and if the holes are too small it is demonstrated that a cold needle pushed through the rubber does not make a permanent opening. A needle is then heated red hot, and the desired holes are made. If a hole thus made is too large, the needle is reheated and the opening seared shut. Witkin [1] expressed the belief that to burn holes in the rubber is bad technic as milk tends to flood the mouth during rest periods, when the infant stops sucking to take a breath. He suggested making a cross cut with a razor blade at the end of the nipple. The openings then close, except when suction is applied.

Administration of vitamin C is indicated from early infancy unless the baby is breast fed by a mother whose intake of ascorbic acid is adequate. If the newly born infant is receiving a formula, 25 mg. of ascorbic acid is indicated daily. Orange juice is given as the source of vitamin C at a later date, when allergic reactions and gastrointestinal episodes are less likely to occur.

Administration of vitamin D also is indicated early. The daily prophylactic dose is about 500 units. The oil is best administered before the morning bath, with the baby lying naked on his back. Then, if any is spilled, his clothing is not stained and the offensive odor is bathed away. The mother is advised to give the recommended dose by running a curved, blunt dropper between the gums and the cheek and squirting the oil on the back of the tongue, or the

1. Witkin, M.: Some Practical Points in the Feeding of Healthy Infants, Arch. Pediat. **56**:452-457 (July) 1939.

baby may be allowed to suck the oil from the dropper. Frequently, unadvised mothers complain that their babies dislike cod liver oil and spit it out. In the first place, they are told that a baby has no absolute distaste except for bitters (though likes may vary in degree from time to time) until the dislike is taught through improper administration, adult registration of dislike or some other conditioned mechanism. In the second place, they are told that a newborn baby cannot spit and also cannot throw food back into the mouth by elevating the tip of the tongue. Therefore, if the oil is not placed behind the middle of the tongue, it may run out of the mouth. A concentrated cod liver oil preparation should be used, to avert the danger of inhalation of the oil and consequent lipid pneumonia.

Now the technic of feeding is demonstrated. The fear which many persons have of handling newly born babies is minimized by watching a physician hold and feed the infant. Probably one of the newly born infant's earliest feelings of security comes from being carefully and snugly held, an important factor in favor of breast feeding. The infant's first weeks may all be extremely impersonal if he is fed from a propped bottle and if he is handled only for toilet purposes; so a baby should be held while feeding. Some infants will do well if fed in almost any position, but if they are fed while lying down, the curd tends to settle to the dependent portion of the stomach. Then frequently, when an infant is shifted into an upright position, in an attempt to raise the air bubble, the milk and its curd shift over the air which then lies at the pyloric end of the stomach. In such an eventuality, it is explained, one of three things may happen: 1. The air may rise, pushing the milk ahead of it, an occurrence that results in eructation or vomiting, which may be projectile. 2. The air may pass into the intestinal tract and cause colic in a baby who, because of inadequate development of the intestinal neuromuscular mechanism, is unable to propel swallowed air. It may be explained that mothers who wonder whether their babies do not have too much gas, because of the considerable amount of flatus they expel, usually have infants free of colic. They are reminded that their babies do not have pain because they readily expel gas. 3. The air may remain in the stomach during the feeding and prevent its complete filling with milk; therefore, the baby may cry before the next meal because it received an insufficient amount of formula. Consequently, instructions are given to support the baby's back with the palm of the hand and to let his head lie between the thumb and finger or to hold him upright in the flexed It is explained that in such a position, mouth and cardiac orifices are alined and air remains on top of the milk at the car end of the stomach. Then the air bubble be raised during the feeding, and the vomi colic and gross feeding irregularities that been mentioned are often prevented.

The group is reminded that nearly all ba spit up or even vomit occasionally, on a mech cal basis, since it is but a short distance f the cardiac end of the stomach to the mo and it is easy for the stomach to overf They are reassured regarding the normal p ence of curds in the vomitus and regarding expected sour odor.

The importance of not regimenting the f ing time strictly is explained. If feeding managed properly, a baby can be given c plete freedom in the self selection of his sc ule and still be regular. The mother is adv that if all conditions are satisfactory the infa feeding time will not be more than twenty thirty minutes. If more time is required, reasons should be examined by the physi and the proper advice given. Frequently question is asked whether a baby should given water between feedings. The answe that all fluid requirements are met by let the infant have all he wants of a correctly scribed formula, unless he is permitted to come too warm. Mothers who feed their ba at the breast are advised to use supplem feeding occasionally, so that mother and b may be separated on occasion and so that becomes necessary to discontinue the br feeding the infant will accept the bottle.

HICCUPS AND THE PROTRUDING ABDOME

The concern about the infant's hiccups protruding abdomen can be abated easily by ing the group this simple explanation: abdomen is crowded owing to the absence a pelvic cavity and the presence of a relati large liver. When food is taken, the abdo becomes more crowded and the stomach be to pump and to stimulate the diaphragm, w then goes into spasm, with hiccup result Any one in the group who has a favorite rem may be advised that any harmless therapy be successful, since, no matter what is or is done, the hiccups usually cease within two minutes. This is true because after the stom has partially emptied the hiccups usually s spontaneously. Hiccups may persist becaus curd has been regurgitated into the lower of the esophagus, with consequent irritation

nerve supply of the diaphragm. After such ccurrence a few swallows of water or milk remove the curd and stop the hiccups.

protruding abdomen may give so much ern that an abdominal binder is used in an t to prevent an umbilical hernia. It may xplained that an abdominal band ceases to a function after a cord dressing is no r needed and that it cannot prevent or cure mbilical hernia. The group is told that y newly born infant has a small umbilical t in the place at which the vessels of the passed through and that this usually closes taneously.

CLOTHING

is suggested that infants should be dressed rding to the temperature and not according he calendar. Frequently, if it is winter, the nt is wrapped in several blankets, even gh the house is overheated. Often in sum- even though the temperature does not ex- that of the overheated winter home, the is dressed only in a diaper. At the time he physician's first visit, the infant is nearly ys overdressed for one of two reasons: In first place, some one may have walked by, his hands and feet and found them to be ively cold. So, because it is believed that feet will produce colic, stockings and more rs have been added. The problem of worry cold hands and feet can usually be solved saying that it is true that all babies with have cold hands and feet but so do all r babies. The explanation given is that the ulation to distal portions of the extremities ewborn babies is relatively inadequate, and, ther or not stockings and covers are used, the nt's hands and feet will be cool as compared other parts of the body. The second reason ally given for additional covers for the baby is he has been sneezing. The group is told that ough a baby may sneeze as a result of catching it may also sneeze because of lint from new hing, and particularly during the newborn od, before the nasal mucosa has grown pro- ve hair.

t is pointed out that if the temperature is 70 75 F. and the infant is awake and active, a er, undershirt and gown should be ade- te. If the baby is asleep, a cotton blanket ddition is recommended. As the temper- re falls at night, covers are added according he way parents choose their own covers. If baby perspires, he is too warm. It is often ful in clinching the point relative to over- ssing babies to state that "hot weather" diarrhea can be produced in the winter by use of too many covers, which overheat the infant and thereby suppress gastric secretions, just as it can be produced by hot summer weather. Also, overdressing may predispose the infant to infection of the respiratory tract.

Cotton clothing and coverings are advised because children are less likely to be allergic to cotton than to wool. Clothing without buttons or ties is suggested, as ties tend to knot or become untied and both buttons and ties are frequently pulled off.

The question of care of the diapers is sometimes important. The mother should be advised to wash them thoroughly in boiling soapy water, and rinse them thoroughly. If a rash does not appear further instructions are not necessary. If a rash does appear, additional details are given.

SLEEPING HABITS

The group is told that the normal, properly fed, secure, newly born infant usually is awake only at feeding time and if properly handled will go back to sleep soon after nursing. Frequently certain muscle groups will twitch, and jerking movements may pass over the whole body, probably owing to inadequate neuromuscular development. These movements carry no ominous significance, and the family should be so advised.

The old idea that every baby must have a crying time should be abandoned. Normal newly born babies cannot be "spoiled" during the first few weeks of life in the sense that they will cry for attention; but that they can be conditioned very early in life has been proved by Aldrich [2] in his employment of a conditioned reflex mechanism for determining deafness in the newborn. Likewise, the infant may be conditioned to awake under varying circumstances. For instance, he may move about when he urinates or for some other reason. If the mother has the baby at her bedside, she may discern this movement, and, in her desire to meet the baby's every need, she may turn on the light, pick the child up and change his diapers. If this ceremony or its equivalent is repeated often enough, the baby is likely to become conditioned to awake frequently at night and eventually to require considerable attention. Aldrich [3] considers much of the early crying to be "compulsive" and probably related to the Moro reflex

2. Aldrich, C. A.: A New Test for Hearing in the New-Born: The Conditioned Reflex, Am. J. Dis. Child. **35**:36-37 (Jan.) 1928.

3. Aldrich, C. A.: Personal communication to the author.

or tonic neck reflex, which disappears after a few months. However, crying at night may be troublesome in an infant after the compulsive crying phase is over. It is well to keep in mind that, just at the Moro reflex does not become overt without a proper stimulus, so does compulsive crying remain minimal if all basic needs are met. A few precautions usually prevent troublesome crying at night. It is explained that it is not abnormal for the infant to awake at night and that if the mother avoids the ceremony of changing diapers and associated acts the baby will go back to sleep, provided there is no obvious need to be met. Unless the bowels have moved or unless there is a rash about the buttocks, it is advised that diapers should not be changed at night. If the infant is warm, a wet diaper does not seem to be discomforting.

Usually the mother will allow the baby to sleep in a room by himself if she can be assured that he will not strangle, smother or become uncovered. To this end, she is advised concerning a proper bed and a "snuggle." A "snuggle" of light weight cotton material should be selected and need not be more restraining than ordinary covers but should be securely fitted to the mattress, to eliminate all danger of choking. The use of a crib of large size, the side of which does not drop to less than about 6 inches (15 cm.) above the upper level of the mattress, insures the baby from falling out of bed and becoming hanged in the "snuggle." In warm weather no other cover is required. Moreover, the group is advised that when the infant grows older his being conditioned to a "snuggle" is helpful, for then he continues his good sleeping habits when otherwise he might crawl or walk about his bed at nap time.

Mothers are told to place the baby in varying positions so that a habit of sleeping in any one attitude is not acquired. Malocclusions or other bony deformities of the skull may result from too prolonged pressure at given points. Such malformations correct themselves through normal growth processes unless the precipitating factor is maintained over a long period. Nevertheless, their prevention is desirable, and occasional change of position may add to the infant's comfort.

From birth until about 2 years of age, the group is told, the sequence with reference to food and sleep always should be, first, to give the child all he wants to eat and then to place him in bed immediately, in a "snuggle." When this routine is maintained, problems of thumb sucking, poor sleeping habits, nap time problems, head banging and bed rocking are unlikely.

THUMB SUCKING

Some persons are of the opinion that th sucking is of little or no importance. How by the foregoing measures it is easily preve and unless it is prevented many children suck their thumbs will be subjected to restra which block unfolding, whether the physi likes it or not. Likewise, they will be requ to face the insecurity and psychologic hazar social disapproval. True, most children sp taneously stop the habit but frequently until after they have cut their second set teeth, by which time permanent malocclu may have resulted. Some children later rever the socially more acceptable, but still undesira habit of biting their fingernails. It is not alw true that well fed, secure babies will not s their thumbs; not all undesirable habits re from a sense of insecurity, although insecu tends to perpetuate them.

PLAYTIME

After the infant shows interest in the pers about him, he should have a properly cho playtime. Indeed, it is pointed out that from standpoint of the baby's sense of security from the standpoint of encouraging his beha patterns to unfold spontaneously, playtime most desirable and may well include use of outmoded rocking chair. However, if he played with after the evening feeding, he m later, wish to stay up until the adults go to b The playtime should come before the feedi not after it, and if the father comes home ab 6 p. m. and never sees the baby awake at ot times, the feeding can easily be changed fro 6-10-2-6 schedule to a 7-11-3-7 or 8-12- schedule. Then he is told to play with the b from about 6 to 7 or 7 to 8 o'clock. It is plained that, physiologically, the tendency is the baby to fall asleep after eating because of relative shift of the blood away from the br to the gastrointestinal tract. If the baby handled too much after eating, this norm process is reversed. The blood shifts away fr the gastrointestinal tract to the brain, so t the baby cannot readily go to sleep even if wants to; however, he does not want to, as he having too much fun.

ADAPTATION TO NOISE

Parents are advised that, although a new born baby should be in a room by himself a away from the center of attraction at sleep time, it is also true that routine housek noises should not be curtailed. If the infant in a room by himself, ordinary household no

not disturb him. The child who is over-ected in regard to noise is likely to become -called light sleeper, and this acquired in-rance to noise may possibly result in his ility to concentrate well on school work or r mental tasks when the surroundings are perfectly quiet.

FEARS

is well to remind the group that the child is to be born with only three fears: namely, of loud noises, fear of being restrained and of sudden sensations of falling. It is hasized that the infant should be protected n these factors as much as possible. Members he group are told that additional fears are ned from other persons or situations; there-, fears felt by adults should be kept from the d. It is pointed out that infants seem to be likely to develop fear reactions if they are stantly made to feel secure. The sense of rity to be afforded by an adult's presence ng illness or other trying experiences is e emphasized. Watching for incipient fears, y removal of their causes and early desensi-tion if they occur may be extremely important revention of later anxiety states.

THE INFANT'S TOILET

t is amazing how complex the simple task bathing the baby can become. Long and de-ed instructions are sometimes given, when ly all that is desired is to have the baby t clean with a little soap and water. Water ns may be begun when the baby's skin rates soap and water, which is usually soon r the infant leaves the hospital. The mother old that any bland soap usually is satisfactory. he skin becomes irritated, another brand of p may be used or washing with soap may be continued temporarily. She is advised that infant should be thoroughly rinsed after ning, especially in the body folds. Occasion-, a baby's skin may react unfavorably to hard er, in which case a water softener can be ed. The temperature of the room and of the n water should be about the same as that sen for adults. Except for specific indica-ns, oil and powder are unnecessary. If soap water prove irritating, then oil can be used cleansing, but if babies could talk they would bably express their disapproval of a general ng once or twice a day, particularly in hot ather. Powder is unessential on the normal n except that it may be desirably applied in y folds when the environmental temperature igh. If oil is used, it should be a purified id petrolatum, without added medicaments, as dermatitis develops in some infants from the added ingredients. For the same reason, powders should be plain talc or some other simple preparation.

As to the proper time for complete immersion of the baby's body in water, why not let the baby be the judge? Whenever he enjoys being immersed is a good time to begin.

Mothers are advised that the eyes, nose and ears may be cleansed with solution of boric acid or water, if they need cleansing; if not, they should be left alone. The significance of the epithelial pearls frequently seen on the roof of the mouth and on the margins of the gums is explained, and the mother is advised never to wash the mouth or to attempt removal of the epithelial pearls. The mother should be instructed as to the careful use of swabs and should be warned against using oil in cleansing the nose because of the danger of lipid pneumonia. Proper cleansing of the genitals should be demonstrated, and the explanation given that a vaginal discharge may be noticed when the estrogenic hormone carried over from the mother disappears from the baby's blood. The vaginal discharge results from sloughing of the adult type of mucosa, which is maintained only as long as sufficient estrogenic hormone is present in the circulating blood. It is also explained that the swollen breasts of both boys and girls revert to normal size when this hormone disappears and that in the meantime they should be left alone.

The mother is instructed how to clean the umbilicus after the umbilical cord has dropped off. A swab dipped in alcohol or in soap and water is used. It is explained that the slight bloody exudate is normal.

The red and white papules, of pinpoint size, noted on the face and particularly about the nose, are of concern to some mothers. Many sebaceous glands and sweat glands are nonfunctioning at birth. As these glands begin to excrete, the sweat glands appear as red papules and the sebaceous glands as white elevations. Both disappear after function has become established. Perspiration increases the number of red papules because of the increased demands for sweating.

STOOLS

Very little need be said at the first visit about the infant's bowel habits. Too frequently certain members of the group already have a "bowel complex." They need to be impressed with the fact that the number of stools is not of primary importance but that the chief concern is with their consistency. A baby is not constipated if he has only one stool a week provided that stool is soft, nor does he have diarrhea if he has a

stool after every feeding unless the stool is liquid. It is explained that many breast-fed babies so completely digest their food that little residue is left to be expelled, whereas many babies who are reared on a formula will have an evacuation after every feeding.

Many become concerned about how hard the newly born infant strains at stool, and how red in the face he becomes. Occasionally, an infant will cry a little while passing, or after passing, a normal stool. Parents are told that all of these reactions may be normal; however, if they are too troublesome, the caliber of the stool should be noted and if the stool is of small diameter the fact should be reported to the physician. Not infrequently newly born babies have an incomplete solution of the proctodeum, which can cause difficulty in passing even stools of normal consistency. True constipation is likely to follow, and conceivably megacolon might develop. The situation is simply corrected by manual dilation.

ADDITIONAL COMMENT

Ideally, two steps in preventive pediatrics should precede the one discussed in this paper. The first step should be taken in the antepartum period, when both mother and father should be interviewed, and the second step at the time of delivery and during the neonatal period. Too frequently the mother receives most of the attention, and the many useful phases of preventive pediatrics for the newly born infant are not applied. The pediatrician seldom has an opportunity to enter the picture until the period herein discussed, and all too often this phase has long since passed when he is called.

The value of the first postnatal family interview has been explained, and the need for giving the reason for everything in lay language is evident. Nevertheless, just as instructions detailed in baby books and pamphlets should be qualified to suit the infant at hand, so should the statements made in this paper. The advice given herein needs to be modified, expanded and added to according to the needs to be met. These needs depend on the particular infant in question and the type of persons in the family group, their attitudes, education, backgrounds and social strata. An attempt to follow literally what is written in this article would be to detract from its major emphasis on individualized care. The given technic is of little importance as long as the groundwork for maximum intellectual, emotional and physical development is secured.

It is to be stressed that a program similar to the one herein outlined is particularly adaptable to use in private practice because it individualizes the preventive program to each infant as he is related to his earliest environment. In addition to the value for the infant and family, the group visit is of practical value for the practicing physician. It saves his time by decreasing telephone calls, prolonged, belated explanations and solving of problems. The postnatal group interview tends to keep the physician and the group on the offensive rather than on the defensive, which is always of strategic value in physician-patient relationships. Advice and "debunking" are always better received before than after a problem arises, because beforehand it can be handled in an impersonal way. This approach helps maintain the physician's preventive point of view. He learns much about how infants grow, and his results become increasingly better.

In view of results obtained from the first postnatal visit, the physician comes to realize that the time is at hand for application of available knowledge to everyday practice in dealing with infants and children of all ages.

Well baby clinics have contributed much to the public and to pediatricians alike, and no doubt they will continue to serve a useful purpose. Nevertheless, they should not be considered to relieve the private practitioner of the responsibility of conducting a preventive pediatric program or the public will be the loser. One of the tendencies in a child health program of the clinic type is, almost necessarily, to fail to individualize each situation as it relates itself to the infant and his community. Much more should be considered than simply a mother-baby-physician (or nurse) relationship. The various persons in a well baby clinic need constantly to correlate their activities, so that the baby and his community are treated as a unit in so far as possible. A properly trained nurse can serve in a useful capacity to both the private and the clinic physician by performing liaison duty in helping instruct mothers in their homes. The past fifty years have contributed greatly to the physician's ability to help children grow up physically well. The future promises still more in the realms of physical health, but in addition it may enable physicians to help the new generation to grow up to be happier, more stable and more efficient intellectually and emotionally. Preventive pediatrics will not reach its greatest potentiality in the average well baby clinic. The new era of preventive pediatrics promises much and for its maximum development is dependent on individualized care.

SUMMARY

The early postnatal family interview is an important preventive tool in creating an early environment favoring optimal intellectual, emotional and physical growth of the infant.

The household group is assembled and all are made to feel welcome parts of the baby's first environment. In easily understandable language, with reasons given, it is explained that the baby is an individual, not to be forced into a mold but to be helped to unfold to the maximal degree according to its own potentiality.

Demonstrations of the preparation of a formula and of feeding technic are given to the group. Alarm of the adults concerning hiccups and a protruding abdomen is dispelled. Suitable clothing is described. Sleeping habits, thumb sucking, playtime and adaptation of the baby to noise are discussed with the group. Fears and how to avert them for the infant are explained. The infant's toilet is simplified, and his bowel habits are considered. In all of these matters members of the group are taken into full confidence.

Such a program is adaptable to private practice and should be expanded to include the entire period of growth as well as the prenatal and neonatal periods.

Well organized programs for well babies and children, applied by the private practitioner, might be an aid in preventing psychoneurotic and psychosomatic disorders.

Obituaries

HERMAN SCHWARZ, M.D.
1878—1945

Herman Schwarz died on May 19, 1945, at the age of 67. He was graduated from Columbia University College of Physicians and Surgeons in 1898; afterward he served his internship at Mount Sinai Hospital, New York. He remained on the staff of that hospital from the time of his graduation until his retirement, three years ago, and at the time of his death was a pediatric consultant. For several years he was also the attending pediatrician at the Beth Israel Hospital.

Dr. Schwarz was one of the first physicians in New York to confine his practice to pediatrics. He was interested not only in the clinical and scientific aspects of pediatrics but in its social implications. In 1910, with the aid of Dr. Ira Hill, an obstetrician, he established the first well baby clinic in New York, using an apartment a tenement house. Later the C. E. Berwi Foundation gave a grant for a building. Babi were delivered in the home and were brought the Berwind Clinic for follow-up care. Pr mature babies were cared for in the institutio until well enough to be moved. Here many you physicians received their first training in infa care. Dr. Schwarz was one of the men instr mental in establishing mother's milk collecti stations.

Dr. Schwarz was known for his generosi toward younger physicians and for advising the as to their future careers in pediatrics. He d voted much time to active work in various orga zations, both lay and medical. He always foug for what he thought was right.

News and Comment

INTERNATIONAL STUDY WEEKS FOR CHILD VICTIMS OF THE WAR
S. E. P. E. G.

Semaines internationales d'Etudes pour l'Enfance victime de la Guerre

Internationale Studienwochen für das Kriegsgeschädigte Kind

Zurich: Sept. 10 to 29, 1945

I.

In its message of Feb. 25, 1944 the Federal Council proclaimed its desire, as soon as conditions permitted, to provide neighboring populations which had suffered from the war with immediate and generous aid.

This great proposal has aroused the liveliest interest both in Switzerland and abroad, as hitherto the war has obliged our country to maintain a reserved and even a passive attitude which have often been misinterpreted. People now look to us to furnish the counterpart of the privilege which we have enjoyed in remaining unscathed. On the other hand, these years of peace in the midst of tumult and revolution have run the risk of isolating us and even of excluding us from the initiatives to which the hardships and the liberation of other peoples are giving birth.

However, a constructive movement, sprung from our very neutrality, is taking shape, based on the desire to forge links, to organize succor for our neighbors and to contribute toward the reconciliation of peoples. For us neutrals it is a case of *noblesse oblige*. Our missi was summarized as follows by an Anglo-Americ journalist, on the occasion of the bombardment Schaffhausen: "Let us never forget the unique r which Switzerland plays in the mutual aid betwe peoples. By her historic traditions, Switzerland is some extent the world capital of mutual aid societi and of all charitable enterprises. We shall still ne Switzerland when the war is over. She will be ther strong and free, in the midst of an ocean of distre and hatreds. *We shall need the Swiss, because nobo except them will be able to enter all countries witho arousing fear.*"

Preserved from injury, imbued with humanitari traditions, situated geographically in the heart Europe, organized on a democratic basis, Switzerla is predestined to become a center not only of mater aid but above all for propagation of culture. We mu start now preparing ourselves for this task in view the armistice and peace.

It has rightly been said that reconstruction cannot confined to economic and political problems: Any pr gram of reconstruction implies methodical assistance children and reeducation of youth. War is made not machines but by the human beings behind them, and is war which unleashes the bloodthirsty instincts a sweeps away the civilizing effects of education a cultural enlightenment. The task is therefore one wiping out the deep scores which the war has imprint in the minds and hearts of children and adolescents.

The undersigned Organizing Committee proposes issue an invitation to Swiss and foreigners interested

s problem, with a view to coordinating measures of tural aid on behalf of child victims of the war. This iative is due to a number of independent Swiss; its is exclusively practical and technical; it has sprung m the needs of the moment, it in no way encroaches any of the activities of existing organizations and its ation will depend on circumstances after the war. Swiss and foreign members of social and educational titutions who wish to help child victims of the war we er a *FORUM*.

II.

When, at the time of the armistice, the question of mediate material aid comes to the forefront and the N.R.R.A. may be offering the respective governments support there will be millions of children who will d sorting out, hospital treatment or repatriation. is will require the application of *ad hoc* methods. In countries devastated by the war *all* children will e suffered physically and psychologically, so that, a certain time, assistance both to normal children d to those affected by traumatisms, stigmas or mental iciency will be merged. Technical methods will make ossible to segregate constitutionally deficient children m those suffering from nervous shock due to the r. It is of the utmost importance to coordinate this rk of diagnosis with the social measures and hospital atment in order, as far as possible, to avoid grave cational mistakes, as well as loss of time and money. us, for instance, children whose sufferings and mal-ustment are mainly due to the war will benefit from elatively simple treatment and a rapid reeducation, ereas constitutionally deficient children will need plication of more searching educational, medical and ial measures over a long period. We should, how-r, make it clear that the measures taken to assist ldren are bound to vary according to the country d even to the region. It will therefore become in-pensable for educational experts, child welfare work-, children's nerve specialists and psychologists to hange views and information in order to coordinate ir efforts. In this connection we would observe—reverse the words of the Anglo-American journalist hat Switzerland is one of the rare lands which na-nals of *other* countries can enter without fear!

For multiple reasons we intend to offer the town of rich the honor of welcoming this first session. Plans d already been laid for holding a Second International ngress for the Education of Exceptional Children re after the war. We now contemplate extending s original scheme to embrace the holding of successive rses, beginning next spring and lasting several weeks, n to participants from all countries. The courses in-de: exchanges of views, elaboration of autonomous ectives for the various countries, coordination of istance activities and especially application of sorting thods and a contribution toward formation of regional ms for special tasks. This is the way in which we end to contribute toward finding an answer to the stant complaints about the shortage of qualified and fessionally trained personnel.

As there is reason to suppose that the majority of participants will not be in a position to assume their n traveling and board and lodging expenses, they l be our guests immediately after crossing the Swiss ntier until the end of the courses. We count on iss families to make them welcome and hope to be e to offer special season tickets enabling them to be eived everywhere, to travel to the courses and plenary etings in Zurich and to visit all our educational ablishments. This hospitality will be in accordance with the spirit of the Federal Council's message of Feb. 24, 1944.

III.

The program of studies will shortly be sent to all interested persons in Switzerland and abroad. We shall petition the Interior and Political Departments to dispatch our invitation to the Ministries of Education and Public Health of the various countries in order that the participants may be granted traveling facilities.

Each course will be autonomous and each program of action based on concrete regional requirements. The duration of the courses will vary in each case, with a minimum of three to four weeks. We contemplate the holding of several courses simultaneously.

The work will be carried out by sections. Each section will summarize its resolutions and plan of action. These conclusions will be distributed to all participants. With a view to synthesis and coordination, the plans of action will be made known and commented on at plenary meetings. Refresher courses are planned for the teams charged with special tasks.

In addition to the sections enumerated below, other sections can be created during the proceedings. The tasks of the sections figure partially in the programs of various Swiss and international organizations. Several of these have already offered to cooperate; their delegates will preside over the work of the corresponding sections.

SECTIONS

1. *Section for Aid Concerning Temporary Lodging, Repatriation and Migrations:* Summary medicopsychologic and educational diagnostics. Lodging of children separated from their families and of exiled and stateless children. Liaison among adoptive families, "parrains de guerre," educational experts and children's families. Preparations for reintegration of children in their countries of origin or adoption; orientation toward a profession.

2. *Medical and Medicopsychologic Section:* Sorting, diagnostics, prognostics and treatment of children stigmatized by the war (acute neuroses and psychoneuroses).

Course: Physical and mental hygiene, nutrition, habitat and protection against epidemics and parasites. Identification of "microbe carriers." Prophylaxis of collective neuroses and psychoses.

3. *Section for Education of Exceptional and Handicapped Children:* Sorting. Formation of specialized teams. Establishment of "medicopedagogic passports," identities, anamnesis, diagnostics, prognostics, therapeutic proposals and orientation toward a profession.

4. *Section for Legal Protection:* Emergency measures of legal protection for children. Creation of permanent machinery for legal consultations. Study of national and international legislation regarding legal protection of children.

5. *Section for Culture and Recreation:* Assistance in the recovery of material and schoolbooks. Children's books. Occupation. Visits and travel. Games, sports and recreation. Cinema.

SECRETARIAT

The Secretariat of the International Association for the Education of Exceptional Children will look after affairs temporarily.

A *permanent Secretariat* will be created as soon as possible in Zurich. Its principal tasks will be to provide for the following:

(*a*) Organization of the first session in Zurich, in the spring of 1945, even if the war is not over.

(*b*) Liaison with Swiss, foreign and international institutions pursuing similar aims, notably: Union internationale de Secours aux Enfants, International Association for the Education of Exceptional Children, Comité suisse d'Aide aux Enfants d'Emigrés, International Bureau of Education, Pro Juventute, etc.

(*c*) Information about all the institutions with which our activity is connected.

(*d*) Press service. Publications.

(*e*) Library, Card index. Guild of Educational Books.

(*f*) Help in republication and dissemination of educational books and technical works on children's psychology which have run out of stock or otherwise become unobtainable in regions devastated by the war.

December 1944.

THE ORGANIZING COMMITTEE

President:

HANSELMANN Heinrich, Dr. Phil., Professor of Zurich University, President of the International Association for the Education of Exceptional Children.

Vice President:

FOREL Oscar, Dr., P.D., Medical Director of Rives de Prangins, Prangins (Vaud).

Secretary-General:

WAGNER-SIMON Thérèse, Mme, Dr. phil., Schnitterweg 52, Riehen near Basel.

BIÄSCH Hans, Dr. phil., Director of the Institute of Applied Psychology, Merkurstrasse 20, Zurich.

BINDER Otto, Secretary-general of Pro Juventute, Seilergraben 1, Zurich.

BOVET Lucien, Dr., P.D., Director of Office médico-pédakogique vaudois, rue Caroline 4, Lausanne.

CALGARI Guido, Dr. phil., Professor, President of the New Helvetic Society, Locarno.

LUTZ Jakob, Dr., P.D., Director of the Policlinic Infantile Psychiatry and of the Observation Cen Kantonsschulstrasse 1, Zurich.

PIAGET Jean, Dr. phil., Professor of Geneva Lausanne Universities, Director of the Internati Bureau of Education, Geneva.

THELIN Georges, Dr. jur., Secretary-general of International Union for Aid to Children, Lévrier 15, Geneva.

TRAMER Moritz, Dr., P.D., Director of the Psyc atric Establishments, Solothurn.

GENERAL NEWS

New Appointments for Dr. McKhann.—Charles Fremont McKhann, vice president in charge research at Parke, Davis & Company, of Detroit, been named professor of pediatrics at the Western serve University School of Medicine and director pediatrics at University Hospitals, Cleveland. He s ceeds Dr. Henry J. Gerstenberger as professor pediatrics at Western Reserve University and direc of pediatrics at Babies and Childrens Hospital. Gerstenberger will become professor emeritus of pe atrics at the beginning of the next school year.

Dr. John A. Toomey will continue as professor clinical pediatrics and contagious diseases at West Reserve University, at City Hospital and also at University Hospitals. He was appointed acting direc of pediatrics at the University Hospitals when Gerstenberger was granted a leave of absence, in J 1944, to devote most of his time during the next five six years to preparing a great mass of clinical scientific data for publication and writing a history the Babies and Childrens Hospital and its predeces

New Appointment for Dr. Miller.—According *Science,* Dr. Herbert C. Miller, assistant professor pediatrics at the Yale University School of Medici has become professor and head of the department pediatrics of the University of Kansas School of Me cine, Kansas City, Kan.

Abstracts from Current Literature

Biochemistry; Bacteriology, and Pathology

XPERIENCE WITH THE SLIDE AGGLUTINATION AND THE CAPILLARY PRECIPITIN METHODS FOR TYPING HEMOLYTIC STREPTOCOCCI. CAROLYN H. HILLES and MORTON HAMBURGER JR., J. Infect. Dis. **75**:265 (Nov.-Dec.) 1944.

One hundred and sixty-five of 333 strains of group A reptococci could not be typed by the slide agglutinan method; nor did they show cross reactions, so that sitive identification was impossible. However, they re later identified by capillary precipitin tests.

The authors liked this method and thought that it d certain definite and superior advantages over the de agglutination method.

TOOMEY, Cleveland.

HE SPONTANEOUS DEVELOPMENT OF ARSENIC-RESISTANCE IN TRYPANOSOMA EQUIPERDUM, AND ITS MECHANISM. HARRY EAGLE and HAROLD J. MAGNUSON, J. Pharm. & Exper. Therap. **82**:137 (Oct.) 1944.

The authors observed spontaneous development of a rain of Trypanosoma equiperdum resistant to certain ganic arsenicals. This occurred in a stock strain in relatively short period in the absence of exposure to ugs of any type and persisted for at least thirty ssages through mice and two passages through rabbits. The organisms were five to two hundred times as sistant to amino- and amide-substituted phenyl arsenides as was the parent strain, and the resistance was served in vivo as well as in vitro.

It is suggested that the primary factor which deterines the activity of the arsenicals, whether against rmal or against resistant trypanosomes, is the degree which they are bound by the organisms and that senic-resistant strains are modified in the sense that e cell membrane becomes less permeable to certain senicals. It is further suggested that in many inances, as in the present case, this change may not be duced by the arsenical but may occur spontaneously, ther as a true genetic mutation or as a temporary riation.

PILCHER, Cleveland.

Metabolism; Infant Feeding Milk and Other Foods

HE TRYPTOPHANE REQUIREMENT OF MAN AS DETERMINED BY NITROGEN BALANCE AND BY EXCRETION OF TRYPTOPHANE IN URINE. L. EMMETT HOLT JR., ANTHONY A. ALBANESE, JANE E. FRANKSTON and VIRGINIA IRBY, Bull. Johns Hopkins Hosp. **75**:353 (Dec.) 1944.

Two adults were given a diet deficient in tryptophan r thirty-six days. They lost weight and showed a gative nitrogen balance; but there were no other inical symptoms, and blood proteins remained normal. he subject who had been on a low protein diet for o days preceding the experiment showed a positive trogen balance when 9.4 mg. of tryptophan per kilogram of body weight was added to the diet. The subject ho had been on his customary diet showed a positive lance when 6.3 mg. of tryptophan per kilogram was ven.

The excretion of tryptophan in the urine decreased sharply on a diet deficient in this substance.

LYTTLE, Los Angeles.

THE CHOLINE AND PYRIDOXINE CONTENT OF MEATS. J. M. MCINTIRE, B. S. SCHWEIGERT and C. A. ELVEHJEM, J. Nutrition **28**:219 (Oct.) 1944.

In a survey of the choline and the pyridoxine content of meats, McIntire and others found that muscle meats contained 0.22 to 0.45 mg. of pyridoxine per hundred grams and 70 to 144 mg. of choline. Higher values were noted for kidney, heart and liver. After the meat was cooked, the choline retention varied from 87 to 114 per cent, and the pyridoxine retention ranged from 14 to 42 per cent; 57 per cent was retained in ham after curing.

FREDEEN, Kansas City, Mo.

THE FRACTIONATION OF PHOSPHORUS COMPOUNDS IN CERTAIN VEGETABLES. EMMETT BENNETT, J. Nutrition **28**:269 (Oct.) 1944.

Bennett presents a report on a quantitative fractionation of the phosphorus compounds of eleven common vegetables into the following groups: inorganic, organic, resistant esters, phosphoprotein and phospholipid and phytin. His data show that the bulk of the phosphorus was in the inorganic form and that there were no unavailable forms of phosphorus present in these vegetables.

FREDEEN, Kansas City, Mo.

THE METABOLIC BASIS FOR THE INDIVIDUALIZED FEEDING OF INFANTS, PREMATURE AND FULL-TERM. HARRY H. GORDON and S. Z. LEVINE, J. Pediat. **25**:464 (Dec.) 1944.

The authors review data derived from metabolic balance studies on premature and full term infants which bear directly on the practice of infant feeding. These data relate to water and energy exchange, renal function, nitrogen and fat absorption and retention, carbohydrate and calcium metabolism and vitamin requirements. Tables and figures giving detailed information pertaining to these items are presented. The purpose of these studies was to emphasize that a thorough understanding of the principles of nutrition and valid interpretation of metabolic data give added support for the individualized feeding of infants.

LEVINE, New York.

CALCIUM, MAGNESIUM AND PHOSPHORUS IN THE MILK OF AUSTRALIAN WOMEN. D. WENIKOFF, M. J. Australia **2**:660 (Dec. 23) 1944.

During the colostral period the mean value for calcium was 28.2 mg. per hundred cubic centimeters; for phosphorus, 15.9 mg., and for magnesium, 3.22 mg. The mean value for calcium rose from the colostral period through the first, second and third months, at which time it reached its peak of 33.8 mg. per hundred cubic centimeters and then gradually declined to a mean value of 26.6 mg. at the eleventh month. The mean value for phosphorus fell steadily to 13.5 mg. at the seventh month, remained at the same level for three months and then declined to 12 mg. at the eleventh

month. The mean value for magnesium varied little during the whole period of lactation, including the colostral period.

GONCE, Madison, Wis.

Vitamins; Avitaminoses

VITAMIN E VS. WHEAT GERM OIL. EZRA LEVIN, Am. J. Digest. Dis. **12**:20 (Jan.) 1945.

After discussing the confusion which exists in the literature because of failure to discriminate adequately between alpha tocopherol and wheat germ oil, the author reports the results of an experiment of Vogt-Moeller in which wheat germ oil was found to be superior to alpha tocopherol in preventing the development of neuromuscular symptoms.

Mackenzie, Mackenzie and McCollum found that cold pressed wheat germ oil was unfit for preparing a concentrate of vitamin E but that solvent-extracted oil could be used. It has also been established that the cold pressed oil loses its potency for treatment of habitual abortion in eight days unless it is kept in the cold.

It is urged that studies involving vitamin E should state the manner in which the vitamin is prepared, its form and its source, as well as the sterility of the material used. Tests of the stability of the preparation should be made throughout the experiment. Further studies of factors other than the tocopherols in stable, solvent extracted wheat germ oil are also indicated.

LESLIE, Evanston, Ill.

VITAMIN C ECONOMY IN THE HUMAN SUBJECT. MICHEL PIJOAN and EUGENE L. LOZNER, Bull. Johns Hopkins Hosp. **75**:303 (Nov.) 1944.

One subject consumed no ascorbic acid until the plasma vitamin C value was zero and the white blood cell–plated layer content began to decrease. He was then given small amounts of ascorbic acid as the white cell–platelet layer value continued to drop. With an ascorbic acid intake of 10 mg. daily, the blood tissue value still decreased, but when the intake was increased to between 18 and 25 mg. daily, the blood tissue levels were maintained from the seventh to the twenty-second month. During this time there were no objective or subjective clinical symptoms. An experimental wound in the twenty-first month healed normally, as shown by biopsy. An adequate intake of ascorbic acid should be between the protecting minimum (18 to 25 mg. daily) and the amount required to maintain saturation, as represented by excretion in the urine (80 to 100 mg. daily).

If the subject has been saturated with ascorbic acid (400 to 500 mg. taken daily from four to six days) and then is given a vitamin C–free diet, scurvy will not appear until from five to six months have elapsed.

LYTTLE, Los Angeles.

A NOTE ON THE MINIMUM REQUIREMENTS OF MAN FOR VITAMIN C AND OTHER VITAMINS. VICTOR A. NAJJAR, L. EMMETT HOLT JR. and HARRIET M. ROYSTON, Bull. Johns Hopkins Hosp. **75**:315 (Nov.) 1944.

Seven young adults were maintained on a constant intake of 25 mg. of ascorbic acid for a period of eighteen months. The results were entirely in accord with those of Pijoan and Lozner, namely, that such an intake protects against scurvy.

LYTTLE, Los Angeles.

BACTERIAL DESTRUCTION OF NICOTINIC ACID. STEWA A. KOSER and GRACE ROSSKOPF BAIRD, J. Infect. D **75**:250 (Nov.-Dec.) 1944.

Bacteria of the green fluorescent pigment–producin group, Pseudomonas fluorescens and allied types, a also Serratia marcescens and related species, are able grow in a simple synthetic medium containing nicotin acid as the only organic compound.

Low concentrations of nicotinic acid support growt while amounts of 0.5 to 1.0 per cent often delay grow or inhibit it entirely.

Destruction of nicotinic acid, as measured by chemic method, occurs during cell multiplication. When 0 per cent nicotinic acid is supplied, often 95 per cent more of the vitamin is utilized; in the presence of 0 per cent nicotinic acid a smaller proportion of the to amount is destroyed.

Many cultures fail to grow, or grow but poorly, wh nicotinamide is substituted for the acid. All cultur fail to grow when the isomers, isonicotinic and picolin acids, are supplied in place of nicotinic acid. Sever other derivatives are utilized less readily than nicotin acid.

Both groups of bacteria causing the breakdown nicotinic acid also synthesize the vitamin when grown mediums originally devoid of it.

The results emphasize the broader field of destructio of vitamins by bacteria, in contrast to the better reco nized role of vitamins as coenzymes or accessory factor

TOOMEY, Cleveland.

THIAMINE CONTENT OF HEN EGGS DURING INCUBATIO NEVIN S. SCRIMSHAW, WILLIAM P. THOMAS, WARREN MCKIBBEN, C. R. SULLIVAN and K. WELLS, J. Nutrition **28**:235 (Oct.) 1944.

Scrimshaw and his associates found that the tot amount of thiamine in hens' eggs, assayed by the macr fermentation method, does not change during incubatio They also found no significant change in the thiami content of sterile eggs kept in the incubator, or at roo temperature, and at 5 C.

FREDEEN, Kansas City, Mo.

THE EFFECT OF THIAMINE DEPLETION AND RESTORA TION OF MUSCULAR EFFICIENCY AND ENDURANC JAMES W. ARCHDEACON and JOHN R. MURLIN, Nutrition **28**:241 (Oct.) 1944.

Archdeacon and Murlin found muscular endurance greatly decreased in their subjects fed a diet low in th B complex vitamins (thiamine 0.27 mg. daily). Thi effect was observed after ten to fourteen days of th deficient diet. With the addition of a natural source thiamine, such as 98 per cent whole wheat bread i amounts containing 0.55 to 1.10 mg. of thiamine, th muscular endurance was significantly increased. Like wise, the inclusion of thiamine hydrochloride in pur form resulted in distinct improvement in endurance ability. Pyridoxine, in one experiment, had a similar effect, but riboflavin had none. In a diet adequate i these vitamins, the inclusion of the B complex vitamin did not result in increased muscular endurance. The authors conclude that the B complex vitamins, given i these experiments as peeled wheat bread, may improv efficiency and endurance, whereas thiamine improve endurance only.

FREDEEN, Kansas City, Mo.

HE EFFECT OF INSTITUTIONAL COOKING METHODS ON THE VITAMIN CONTENT OF FOODS: 1. THE THIAMINE CONTENT OF POTATOES. ANNE W. WERTZ and C. EDITH WEIR, J. Nutrition **28**:255 (Oct.) 1944.

The thiamine content of Green Mountain potatoes as studied at various steps in the cooking and serving rocedures. Small losses resulted from soaking the otato prior to cooking and from holding the potato in steam oven for a period as long as one and a half ours. The greatest loss, 14.1 per cent, occurred during e steam cooking process. The over-all loss of thiamine, xclusive of that during soaking, approximated 20 per ent.

FREDEEN, Kansas City, Mo.

ONGENITAL MALFORMATIONS OF THE EYES INDUCED IN RATS BY MATERNAL VITAMIN A DEFICIENCY. JOSEF WARKANY and ELIZABETH SCHRAFFENBERGER, Proc. Soc. Exper. Biol. & Med. **57**:49 (Oct.) 1944.

Twenty female rats were reared on a diet very low vitamin A and at 3 months of age were bred to ales of the same strain which had been reared on dequate diets. Twelve of the females were bred and nly 3 mothers carried litters to or near term, while females resorbed their embryos. Three litters, of 19 ad young, were obtained by cesarean section, all of hich had abnormal eyes. In these specimens, there as no clear differentiation of lid and cornea; the nterior chamber was rudimentary; the space which hould have contained the vitreous was filled with conective tissue; the retina was folded and disorganized; e lids were fused with the cornea, and the anterior hamber appeared only as a linear space. In some ecimens, a cleft in the retina with a coloboma formaon was found. In control studies of 410 young from females fed on the same diet except for the addition vitamin A, the eyes were normal.

HANSEN, Galveston, Texas.

CASE OF SCURVY (BARLOW'S DISEASE). A. CASAUBON, R. DAMONTE and H. LOPEZ, Arch. argent. de pediat. **22**:410 (Nov.) 1944.

A case of scurvy in a 9 month old infant is reported. he patient presented the complete clinical picture and l the roentgenologic signs of this disease. Apparently s diet was adequate, but a careful history showed a ily vitamin C intake of only 1 mg. Recovery followed e daily administration of 200 mg. of ascorbic acid for urteen days.

A short comment on the clinical varieties of scurvy given.

CASSORLA, Chicago.

ygiene; Growth and Nutrition; Public Health

HE FELS COMPOSITE SHEET: I. A PRACTICAL METHOD FOR ANALYZING GROWTH PROGRESS. LESTER W. SONTAG and EARLE L. REYNOLDS, J. Pediat. **26**:327 (April) 1945.

HE FELS COMPOSITE SHEET: II. VARIATIONS IN GROWTH PATTERNS IN HEALTH AND DISEASE. EARLE L. REYNOLDS and LESTER W. SONTAG, ibid. **26**:336 (April) 1945.

In these related papers a method of recording and terpreting the progress of children's growth is deribed and demonstrated. In the first paper, the ethod is described. It involves the use of a comsite sheet, wherein a number of items, such as height, eight, skeletal development and dentition, may be otted at the same time. The interrelationships of various measures of growth over a period of time may thus be seen. Any growth factor, physiologic characteristic or measure of performance for which means and standard deviations are available may be so plotted.

The advantages of this method include simplicity of use, simultaneous comparison of children in terms of factors considered, growth progress and position in the group, determination of body type (height-weight relationship) and changes in that body type, graphic demonstration of deviations from the normal pattern of development in any growth item considered and easy comparison of growth progress of individual children.

In the second paper, the use of the composite sheet is illustrated for 14 cases, taken from the records of longitudinal growth of the Fels Research Institute group of normal children. Representative composite sheets include: inconstant growth patterns; shifts in relationship to the group pattern; parallel drop in several growth characteristics; growth patterns suggesting strong genetic influence; growth patterns of twins, of children having frequent illnesses, of children exposed to and contracting primary pulmonary tuberculosis, of children influenced by subclinical hypothyroidism and of a child whose mother suffered from severe toxemia of pregnancy, and growth patterns illustrating seasonal and cyclic factors.

The variability of growth patterns during the first ten years of life is discussed. Tables for height, weight, skeletal development (two measures) and both deciduous and permanent teeth are presented. Composite sheet forms and conversion tables for ready plotting of growth data onto the sheet are available at cost from the Fels Research Institute.

AUTHORS' ABSTRACT.

Prematurity and Congenital Deformities

CONGENITAL MALFORMATION OF THE EXTREMITIES. J. D. STENSTROM, Canad. M. A. J. **51**:325 (Oct.) 1944.

This paper is based on a study of 45 cases of congenital malformations of the extremities at the Army reception center.

Congenital amputations, absence of radius, various hypoplasias and aplasias, syndactyly, polydactyly, hereditary deforming chondrodysplasia, defects of pectoral muscles, dislocation of the hip and recurrent dislocation of the patella are discussed. The time to begin treatment in patients amenable to treatment is in infancy.

MOORE, Omaha.

THE PERIOD OF HOSPITALIZATION FOR PREMATURE INFANTS. CHARLES NEWBERGER, Illinois M. J. **86**:219 (Oct.) 1944.

In response to a questionnaire sent by the Illinois Division of Maternal and Child Hygiene to twenty of the larger hospitals in Illinois, the following information was obtained.

Of 1,557 premature infants, 16.3 per cent were stillborn and 83.7 were born alive. Of 1,303 living premature babies, 25.4 per cent died neonatally in the hospital, and 74.6 per cent were discharged from the hospital.

Of 900 infants whose period of hospitalization is known, 29.2 died neonatally, from two minutes to ninety-three days after birth. Their average stay in the hospital was two and four-tenths days; 70.8 per cent were discharged living from the hospital after a period of hospitalization ranging from three to one hundred and twenty-two days, with an average of three to one hundred and twenty-two days; the average for this group was twenty-four and five-tenths days.

If all 900 infants born alive and for whom the period of hospitalization is known are considered, regardless of whether they died or were discharged living, the average length of stay in the hospital was eighteen days.

BARBOUR, Peoria, Ill.

INIENCEPHALUS. SUSANNE J. PATERSON, J. Obst. & Gynaec. Brit. Emp. **51**:330 (Aug.) 1944.

The author reports 4 cases of iniencephaly. The cardinal features of iniencephaly are: (1) deficiency in the occiput, (2) rachischisis of variable extent and (3) fetal retroflexion.

The cause is unknown. In the 4 cases described, one or two suggestive points emerge: None of the pregnancies were first pregnancies; none of the mothers were very young, and the fetuses were all female. Abnormalities other than those connected with iniencephaly were present in half the cases. In every case there was some abnormality of the pregnancy–placenta previa, hydramnios or hypertension. The author suggests that this condition is not so rare as previously believed.

CUMMINGS, Evanston, Ill.

Newborn

PHLEBOSTASIS AND PHLEBOTHROMBOSIS OF THE BRAIN IN THE NEWBORN AND IN EARLY CHILDHOOD. OTTO MARBURG and LOUIS CASAMAJOR, Arch. Neurol. & Psychiat. **52**:170 (Sept.) 1944.

"Phlebothrombosis and phlebostasis are frequently the cause of severe disintegration of the brain in early childhood. Lesions of the veins and venous sinuses are predominantly caused by trauma before, during or after birth. But other causes, such as infection (?), cannot be excluded. The site of the lesions corresponds to the drainage areas of the veins: the centrum semiovale, the area of the vena terminalis anterior and the vena lateralis ventriculi of the great vein of Galen (vena cerebri magna); the cortex and adjacent parts of the meditullium, drained by the sinus longitudinalis superior.

"The pathologic changes are necrosis, malacia and serous perfusion, followed by total or partial destruction of the tissue, with sparing of the most resistant parts (glia) and destruction of the least resistant structures (myelin sheaths and axons).

"Repair depends on the degree of destruction: Complete destruction is followed by cyst formation, and incomplete destruction, by sclerosis.

"Thus, the condition under discussion is closely related to diffuse sclerosis occurring in childhood, which to some extent is only the terminal stage of a phlebothrombotic or a phlebostatic state.

"The same relation seems to apply to a disease in lambs, called 'swayback.'

"In prevention of this disturbance, particular care during pregnancy and delivery is necessary."

BEVERLY, Chicago.

THE CRYING OF NEWLY BORN INFANTS: THE COMMUNITY PHASE. C. ANDERSON ALDRICH, CHIEH SUNG, CATHARINE KNOP, GERALDINE STEVENS and MARGARET BURCHELL, J. Pediat. **26**:313 (April) 1945.

This is the first of a series of reports on the crying of newly born babies. It comprises the results of thirty days' continuous observation as to the amount of crying done by the infants in the nursery for newborn at St. Mary's Hospital, Rochester, Mi The data are analyzed in this report from the sta point of the crying of the community of infants distinguished from that of the individual babies.

Charts of the amount of crying, as well as the amo of nursing care, were made for each hour of ev day. These were arranged to give a diagram of diurnal crying for an average baby for an average d

A reciprocal relationship between nursing care a amount of crying was clearly shown, and it was demonstrated that floor and nursing routines were flected in the wailing of the babies. During this per the average baby cried nearly two hours daily.

It was possible to study statistically the number babies crying at any one of 720 instants. It was fou that as many as 50 per cent of the babies cried at o only 0.14 per cent of the time, whereas on the aver about 10 per cent of them were vocalizing at on This makes it seem unlikely that crying in the nurs is largely contagious.

A slight, but possibly significant, correlation betwe crying and the barometric pressure was found.

Since crying in the newborn period is a reflex, defe sive mechanism, it would seem that a nursery routi which reduces the need for it should be the goal. Fr this preliminary survey it must be assumed that it w be necessary to increase nursery care in the pres setup in order to improve the situation. In additio the discrepancies which always crop up between nurs care and floor routines must be ironed out.

This report will be followed by a study based the same data, in which the crying of individual bab will be considered.

AUTHOR'S SUMMARY.

RH ANTENATAL TESTING. JOHN MURRAY, Lancet 594 (Nov. 4) 1944.

Tests for the Rh factor showed that 12.5 per cent the serums of 200 unselected, consecutive, antepartu mothers were Rh negative. The value of the examin tion of expectant mothers' serums is seen in that 2 of t 25 Rh-negative serums had anti-Rh antibodies.

In this series only 4 serums, 1, 2, 3 and 1 + 3, we used and for ease of description the cells were nam after the serums with which they reacted. Those ce which reacted with serums 1 and 3 were called Rh

LANGMANN, New York.

Acute Contagious Diseases

MENINGOCOCCAL INFECTION: I. MENINGOCOCCAL ME INGITIS AND SEPTICEMIA. EARL R. DENNY, R. BAUSCH and M. A. TURNER, Am. J. M. Sc. 20 478 (Oct.) 1944.

An epidemic of 61 cases of meningococcic infecti occurred after a wave of acute infections of the respir tory tract. The latter seemingly bore a direct relati to the onset and progress of the epidemic of mening coccic infections. Eighty-six per cent of the ca occurred among raw recruits.

In 51 cases of acute meningococcic septicemia wi meningitis and in 2 cases of acute fulminating meni gococcic septicemia without meningitis, all of the co monly described signs and symptoms were encountere but, in addition, tachypnea was noted in 88 per cent the cases.

The initial treatment should routinely consist sodium sulfadiazine given intravenously, and the inje

should be repeated in those cases in which the oral inistration of sulfadiazine is not feasible. There e no fatalities among the 53 cases reported in this es and in 8 additional cases of acute evanescent ningococcic bacteremia, to be reported later.

HENSKE, Omaha.

OOPING COUGH. NELLES SILVERTHORNE, J. Pediat. **25**:584 (Dec.) 1944.

Diagnostic methods for dealing with whooping cough reliable and could, with proper laboratory personnel material, be made available as an aid to physicians. Evidence which points to the fact that children may successfully immunized against whooping cough has n constantly accumulating during the last ten years. Pertussis toxin and antitoxin per se are not reliable ducts to use in the prevention and treatment of ooping cough. There is more evidence which favors use of vaccine of the whole micro-organism and of ibacterial serums for treatment of this disease.

Pertussis cutaneous tests using toxin are not reliable exes of immunity to whooping cough.

More satisfactory culture mediums have been devel- d for diagnostic culture work and for the production pertussis biologic products.

In conclusion, it may be said that if every physician kes certain to vaccinate and revaccinate children with se I vaccines, whooping cough may well become a ease of the past.

SILVERTHORNE, Toronto, Canada.

EATMENT OF MENINGOCOCCAL MENINGITIS WITH PENICILLIN. MANSON MEADS, H. WILLIAM HARRIS, BERNADO A. SAMPER and MAXWELL FINLAND, New England J. Med. **231**:509 (Oct. 12) 1944.

Meads, Harris, Samper and Finland report observa- ns on 9 unselected patients with meningococcic menin- is admitted to the Boston City Hospital during April 44. The ages of the patients ranged from 14 to 58 ars. Seven patients were acutely ill and irrational. e was acutely ill and rational, and 1 was only mod- ately ill when first seen. The duration of the acute ess before hospitalization varied from one to seven ys, with an average of about three days. The usual oratory studies, including examination of the cerebro- inal fluid, were performed. Five of the patients had ncomitant meningococcemia. All the patients were ven the calcium salt of penicillin intrathecally and ramuscularly.

The clinical response to penicillin is slower than that the sulfonamide compounds, for the following rea- ns: Biochemical and bacteriologic abnormalities in the inal fluid persist longer; there may be recurrences; e meningococcus carrier state may persist; the treat- ent is difficult, and, finally, one may eventually have resort to the sulfonamide compounds. Also, strains the type I meningococcus vary greatly in their sus- ptibility to penicillin. Those studied in this series of tients resembled the relatively resistant strains of aphylococcus aureus and Streptococcus viridans.

The authors conclude from their observations that e sulfonamide compounds are the drugs of choice in e treatment of meningitis due to the type I meningo- ccus and that penicillin may be effective in treatment this form of meningitis in the doses used (from 0,000 to 1,155,000 Oxford units). However, the sponse is less favorable than that following the use sulfonamide compounds.

GUTTMAN, Philadelphia.
[ARCH. NEUROL. & PSYCHIAT.]

RESULTS OBTAINED IN TREATMENT OF WHOOPING COUGH BY HIGH ALTITUDE CHANGES BY AIRPLANE. BOLIVAR D. CORREA, Arch. de pediat. d. Uruguay **15**:716 (Dec.) 1944.

One hundred and twenty-eight children suffering from whooping cough, whose ages ranged from 17 days to 15 years (11 under 1 year) were treated by airplane trips of thirty to fifty minutes' duration. The speed at which the airplane rose was approximately 150 meters per minute, to a height of 1,500 meters. The temperature was kept at from 15 to 20 C. This treatment was considered beneficial, as all the patients recovered promptly within two weeks.

SANFORD, Chicago.

Acute Infectious Diseases

AGE AS A FACTOR IN STREPTOCOCCOSIS. GROVER F. POWERS and PAUL L. BOISVERT, J. Pediat. **25**:481 (Dec.) 1944.

In summarizing this study of age as a factor in the natural history of infection with the hemolytic streptococcus of group A, attention is first called to the importance of recognizing the role of the upper respiratory tract. Here the organisms have their primary habitat and natural portal of entry in the great majority of cases; they cause the disease designated as streptococcic fever, which expresses itself in different clinical patterns at different age periods. In some cases the microbes may be present without causing clinical evidences of disease. From the original site of localization, the streptococci, by blood stream dissemination, by contiguity or by implantation produce lesions in the skin, glands, viscera, meninges, bones or sinuses. After a latent phase of varying length and by a mechanism probably akin to that of allergic reactivity, there sometimes develop sequelae in the form of acute hemorrhagic nephritis and a polyarthritis similar to, if not identical with, rheumatic fever. To the various types of clinical response the designations childhood, intermediate, adult and latent, after the manner of classification of clinical tuberculosis, seem appropriate; undoubtedly there are mixed and transitional forms of both diseases. Bacteremia and suppurative lesions, including pyoderma, purulent otitis media, cervical abscess, primary peritonitis and empyema, are more frequently observed with the childhood type of streptococcic fever, and the nonsuppurative sequelae—acute hemorrhagic nephritis and rheumatism—after the intermediate and adult types. The intermediate type, scarlet fever, may be thought of as two diseases—erythrogenic toxemia and streptococcic fever, either childhood or adult type. This study furnishes the basis for an integrating concept of streptococcic infections and emphasizes the fact that they change in clinical pattern with age, just as do body form and endocrine maturation in the complex process called growth and development.

POWERS, New Haven, Conn.

BACTERIAL ENTERITIS. GERARDO VARELA, J. Pediat. **25**:555 (Dec.) 1944.

In 1,101 specimens of stool from children with diarrhea, 89 positive reactions were elicited; in 1 case two different species were found, Salmonella paratyphi B_2 and Salmonella sp. (Newport type). The greatest incidence of Salmonella infections was found in children from 1 to 2 years of age.

"We have treated the Shigella infected patients and the carriers with sulfaguanidine, and we have apparently obtained good results with the Flexner group. We have not obtained good results using the same drug against different species of Salmonella such as S. typhimurium, S. anatum, S. manhattan, S. minnesota, S. chester, S. oregon, S. newport, S. newington and S. paratyphi B, since we found the patients continued to eliminate the organisms after having received what was considered a satisfactory treatment. Also we have not obtained good results against S. typhi in healthy carriers and in those presenting a complication such as cholecystitis."

GRULEE, Evanston, Ill.

ARTHROPOD-BORNE DISEASES. ERNEST CARROLL FAUST, J. Pediat. **25**:563 (Dec.) 1944.

In this consideration of arthropod-borne diseases the term "arthropod" is first defined, and a few examples of different types of arthropods are cited. The arthropod is shown to be an ancient host of parasites, many of which in this host produce no evident tissue damage but when transmitted to man cause disease processes of serious consequence. Some arthropods invade the skin or mucous membranes, causing pain and at times disfigurement, whereas others produce disease by introducing their venom or their saliva into the skin. Yet the major importance of arthropods from a medical viewpoint consists in their relationship to man as vectors of disease-producing micro-organisms.

As mechanical vectors, arthropods are at times responsible for outbreaks of typhoid, bacillary and amebic dysentery and cholera; for acute catarrhal conjunctivitis, for anthrax and tetanus infections, for yaws, and probably for poliomyelitis. As essential hosts and transmitters of pathogens, blood-sucking arthropods are responsible for malaria, yellow fever, dengue, pappataci fever and encephalomyelitis; for several types of filariasis; for the typhus group of fevers; for the leishmaniases and trypanosomiases; for bartonellosis; for plague and frequently tularemia, and for the relapsing fevers.

Immunization constitutes an effective method of control for some of the arthropod-borne diseases. In a few instances therapeutic prophylaxis is helpful. By and large, however, the attack of most practical and broadest application is directed against the arthropod itself, by disinfestation of persons and premises, by repellants, and in the case of mosquitoes, antilarval and larvicidal measures. To avoid exposure to tick-transmitted tularemia or relapsing fever, persons must keep away from tick-infested ground. Finally, plague and murine typhus can be successfully controlled only by war against rats and other rodents, which are the reservoirs of these diseases and which harbor the fleas that transmit the causal organisms to man.

FAUST, New Orleans.

TREATMENT OF STAPHYLOCOCCAL INFECTIONS WITH PENICILLIN BY INTERMITTENT STERILIZATION. JOSEPH W. BIGGER, Lancet **2**:497 (Oct. 14) 1944.

The results of experiments justify the statement that penicillin is bactericidal for Staphylococcus pyogenes.

The frequent failure to sterilize broth containing staphylococci with penicillin was disappointing. However, the attempts failed only by a narrow margin. In most of the tests the survivors numbered less than 100 cocci out of the 250,000,000 originally present.

It is believed that persisters are insensitive to penicillin because they are temporarily in a nondividing phase and because penicillin kills only bacteria which are about to divide.

Unlike resistant strains, descendants of persisters are easily killed by penicillin.

Penicillin fails to cure staphylococcic infections in the body because some of the cocci are in the persister phase.

A scheme of treatment in which penicillin is alternately administered and withheld is suggested.

LANGMANN, New York.

THE BACTERIOLOGIC DIAGNOSIS OF BACILLARY DYSENTERY BY MEANS OF RECTAL SWABS. A. A. FERRIS and C. FORTUNE, M. J. Australia **2**:430 (Oct 2) 1944.

The authors found rectal swabs taken under vision through a proctoscope more dependable than stool in the bacteriologic diagnosis of bacillary dysentery. Desoxycholate-citrate agar was considered the most suitable culture medium for examination of rectal swabs.

GONCE, Madison, Wis.

OBSERVATIONS ON THE EPIDEMIOLOGY OF SCRUB TYPHUS. C. E. COOK, M. J. Australia **2**:539 (Nov. 18) 1944.

From observations on outbreaks of scrub typhus (tsutsugamushi fever) in Australian troops, Cook concludes: 1. Endemicity of scrub typhus is restricted to small foci of high infection widely separated from each other, even in apparently similar terrains. The foci show an association with jungle-fringed streams. 2. Infection of man takes place only at atmospheric temperatures over 65 F. 3. The usual incubation period is about twelve days. 4. There is no indication of the identity of the animal reservoir beyond the fact that it is probably an animal of semiaquatic or jungle habitat. It is highly improbable that the large number of rodents suspected by Heaslip serve as a reservoir for the infection of man. 5. There is no evidence to incriminate any one particular species of mite as the specific vector. It does, however, appear that the mites causing scrub itch are not concerned. 6. The epidemiology of scrub typhus is consistent with its transmission by larval ixodid ticks, and the desirability of inquiry in this field is indicated.

GONCE, Madison, Wis.

STAPHYLOCOCCIC SEPTICEMIA IN A PREMATURE BABY TREATED WITH PENICILLIN. E. SOTO PRADERA, JOSE R. MONTALVO and JOSE CABALLERO, Bol. Soc. cubana de pediat. **16**:412 (Oct.) 1944.

A case of Staphylococcic septicemia in a premature baby 1 week old is reported. The infection was secondary to cellulitis of the neck. Complete recovery occurred after seventeen days' treatment with penicillin.

KEITH, Rochester, Minn.

Chronic Infectious Diseases

THE FATE OF VERY YOUNG CHILDREN WITH TUBERCULOSIS. GERTRUDE F. MITCHELL and HENRY STUART WILLIS, Am. Rev. Tuberc. **50**:376 (Oct.) 1944.

The authors of this paper were fortunate in having at their disposal a sanatorium with adequate bed capacity and the privilege of keeping their patients until the disease appeared to be under satisfactory control or until death supervened.

A group of 243 children 3 years of age or under rnished the basis of this report. All the children had berculosis. The admission classification (roentgen-ggic diagnosis) was as follows: involvement of acheobronchial lymph nodes, 57; involvement of renchymal tissue, only 46; involvement of tracheo-onchial lymph nodes and parenchymal tissue, 110; infection, 30. Fifty-three per cent of these children ere hospitalized for one year or longer. Thirty-seven ed while in the hospital, of whom 18 had reinfection berculosis. Of the 206 children discharged alive, 194 d primary and 12 reinfection tuberculosis. Of the children with involvement of tracheobronchial lymph des, the disease was apparently arrested in 43. Of e 46 children with parenchymal involvement, the dis-se was apparently arrested in only 31. Of 110 chil-en admitted with disease in the lungs and lymph des, the disease was apparently arrested in 80. Of all 3 children with primary disease, the discharge classi-ation was "apparently arrested" for 154; and dis-arge by death, for 19. After the patients left the spital, it was possible to follow up 153 children with rimary disease over a variable but significant length of me. Of 126 patients with a discharge diagnosis of pparently arrested," 121 were well at the last obser-ation, as were 21 of 27 patients in other classifications. s was to be expected, the outlook was distinctly worse r the Negro child, for the child with reinfection tu-erculosis and for the younger children (from birth to 3 months).

Their experience leads the authors to the conclusion hat children given adequate treatment and kept suffi-iently long in the hospital have an excellent chance of urvival irrespective of race, and not only of survival ut of recovery.

EUGENE SMITH, Ogden, Utah.

NCIDENCE OF TUBERCLE BACILLI IN THE MILK SUPPLY OF CAPE TOWN. B. M. HORWITZ, South African M. J. **18**:357 (Nov. 11) 1944.

Of 1,007 first samples of milk taken from individual erds supplying Capetown, Union of South Africa, uring the past eleven and one-half years, 34 have con-ained tubercle bacilli. Since the minimum infection f herd samples is 3.4 per cent, that of bulked supplies ust be much higher. The author concludes that the igures cited are a strong argument in favor, first, of ompulsory efficient pasteurization of all milk supplied o Capetown, other than that, possibly, from tuberculin-ested herds, and, second, of the inauguration of a ampaign for the total eradication of tuberculosis from he herds.

GONCE, Madison, Wis.

Diseases of Blood, Heart and Blood Vessels and Spleen

CONGENITAL SUBAORTIC STENOSIS. DENNISON YOUNG, Am. Heart J. **28**:440 (Oct.) 1944.

The author made a clinical diagnosis of subaortic stenosis in 10 instances during a routine examination of approximately 18,000 soldiers. The usual clinical findings were: murmur and thrill of aortic stenosis, with normal or nearly normal aortic second sound; normal blood pressure and pulse pressure, and absence of history of attacks of rheumatic fever or signs of rheumatic involvement of the heart. There were usually no symptoms referable to the heart.

GIBSON, Chicago.

QUANTITATIVE RELATIONS BETWEEN HORSE HEMOGLOBIN AND ANTI-HEMOGLOBIN: THE CONDITION OF ANTIGENICITY. WILLIAM C. BOYD and SAUL MALKIEL, J. Infect. Dis. **75**:262 (Nov.-Dec.) 1944.

Although hemoglobin is on the whole a poor antigen, it was found possible to produce fairly good antibodies in rabbits by injecting solutions of crystalline horse hemoglobin mixed with killed bacilli. Iron and nitrogen determinations enabled the ratio of antibody to antigen in the specific precipitates to be determined. The results were quite in line with those of previous workers who had found hemoglobin to be antigenic. The problem of antigenicity is briefly discussed.

TOOMEY, Cleveland.

A CASE OF DYSHÆMOPOIETIC ANEMIA WITH MEGALOBLASTIC MARROW AND NORMOCYTIC BLOOD PICTURE RESPONDING TO LIVER THERAPY. A. J. RHODES, Edinburgh M. J. **51**:439 (Oct.) 1944.

A boy of 14 years had relapsing anemia after influenzal pneumonia, pleurisy and pericardial effusion. In the following three years it was found that the marrow was megaloblastic, associated with a normocytic peripheral blood picture. In the three relapses the disease responded to the use of liver. The sternal marrow presented a typical megaloblastic reaction, such as one sees with pernicious anemia. The peripheral blood showed a normochromic and normocytic state but no definite macrocytosis.

NEFF, Kansas City, Mo.

BONE MARROW INFUSIONS FOR INFANTS. GERHARD BEHR, Lancet **2**:(Oct. 7) 1944.

The author has found the tibial route useful for infusions in infants. The instrument used was a modification of that designed by Hamilton Bailey. The needle was firmly held in the bone after six days, the longest infusion given.

This method was used successfully in infants from 1 day to 2 years old. Half-strength lactate-Ringer solution in 5 per cent dextrose was most commonly used for dehydrated infants; 10 cc. of plasma per pound (0.5 Kg.) of body weight was often added during the second day of the infusion.

LANGMANN, New York.

CONGENITAL HEART DISEASE IN AN INFANT WITH MONGOLISM. J. M. ALBORES and J. A. CAPRILE, Arch. argent. de pediat. **22**:432 (Nov.) 1944.

A case is reported of a 55 day old infant with mongolism showing enlargement of the heart; an electrocardiogram was interpreted as typical of a congenital cardiac anomaly. No heart murmurs were heard. The infant died after an episode of bronchopneumonia with signs of acute cardiac failure.

At necropsy, both interauricular and interventricular communications were found, the latter being very large. The authors believe that this large interventricular communication may account for the lack of murmurs.

Comments on the importance of the simian-like line of the hand in the diagnosis of mongolism are given.

CASSORLA, Chicago.

Diseases of Nose, Throat and Ear

REHABILITATION OF THE CHILD WHO IS HANDICAPPED BY DEAFNESS. RUTH P. GUILDER and LEROY A. SCHALL, Laryngoscope **54**:511 (Oct.) 1944.

As a result of the development of the vacuum tube hearing aids there are now greater opportunities to

rehabilitate permanently deafened children. These children should be studied carefully. Their general health should be improved when possible. Criteria should be established for the recommendation of hearing aids. Clinics should be established to aid in the initial adjustment which the child will have to make. After the child has become used to his better hearing with the aid, his educational program should be worked out.

The authors describe the work being done at the Massachusetts Eye and Ear Infirmary, where "an individualized remedial program has been outlined for each child." They discuss the selection of the hearing aids and the use of the aids in different kinds of deafness. Results are evaluated.

HITSCHLER, Philadelphia. [ARCH. OTOLARYNG.]

Diseases of Lungs, Pleura and Mediastinum

BRONCHITIS. ROBERT S. STEEL, M. J. Australia **2**:373 (Oct. 7) 1944.

The author's classification of bronchitis includes: (1) acute bronchitis; (2) acute laryngotracheobronchitis; (3) chronic fibrinous bronchitis, and (4) chronic bronchitis.

Acute attacks may be primary or may follow an ordinary cold. Laryngotracheobronchitis begins as laryngitis but progresses rapidly and frequently ends fatally within twenty-four to forty-eight hours. It is seen mostly in children. Chronic fibrinous bronchitis is rare. It is characterized by paroxysms of coughing and by expulsion of one or more casts of the bronchi.

Chronic bronchitis has no definite cause but is influenced by many factors. It is probably closely related to the common cold, of virus origin. Organisms found in sputum are secondary. Infected tonsils and adenoids should be removed. So-called hardening processes are of no avail and may be harmful. Climactic influences, such as the rapid changes in temperature and wind at certain seasons, are important factors.

TENNEY, Madison, Wis.

Diseases of the Gastrointestinal Tract, Liver and Peritoneum

THE SYNERGISTIC EFFECT OF CAFFEINE UPON HISTAMINE IN RELATION TO GASTRIC SECRETION. J. A. ROTH and A. C. IVY, Am. J. Physiol. **142**:107 (Aug.) 1944.

It has recently been demonstrated that caffeine is a potent stimulant of gastric secretion in the cat and in man. In the course of three studies on the comparative effectiveness of histamine and caffeine as gastric stimulants, it was observed that after administration of caffeine a subsequent dose of histamine dihydrochloride provoked a greatly enhanced gastric secretory response when compared with the response to histamine before caffeine was given. The purpose of the present investigation was to determine whether a synergistic relation between caffeine and histamine can be demonstrated, the term synergism being used to characterize the response obtained when the combined action of two drugs administered at the same time is greater than that which would be anticipated from the sum of their individual actions. Such a response was demonstrated. This synergism assumes practical importance in consideration of the patient with ulcer.

NOURSE, Cleveland.

Nervous Diseases

SUBARACHNOID ADMINISTRATION OF PYRIDOXINE HYDROCHLORIDE IN DISEASES OF THE NERVOUS SYSTEM. SIMON STONE, J. Nerv. & Ment. Dis. **100**:1 (Aug.) 1944.

Nerve lesions of varying type and degree have been produced experimentally on a diet deficient in pyridoxine. Clinically, there are many reports in the literature in which pyridoxine yielded favorable results in the treatment of certain neurogenic disorders of mild or severe types.

The author administered pyridoxine hydrochloride intraspinally to 26 patients who suffered from various disturbances of the nervous system. The average dose for children was 30 mg. The adult dose was 50 mg., with one to four injections per patient. The treatment was well tolerated, and there were no untoward results.

JAHR, Omaha.

Psychology and Psychiatry

TWO MILLION 4-F'S CHARGED TO ILLITERACY. JOHN K. NORTON, California & West. Med. **62**:96 (Feb.) 1945.

"Illiterate Rejectees Are Included in the Four Million Rejectees Due to Physical and Mental Causes.

"Dr. John K. Norton of Columbia University said on January 29 that illiteracy alone has deprived America of a fighting force equivalent to the Russian Army now driving toward Berlin.

"Norton testified at a hearing held by the Senate Committee on Education and Labor that 'we have had to reject at least 2,000,000 4-F's—enough men to equip the army put on the current Russian offensive—because they were denied educational opportunity.'

"He said southern states, with 'substandard schools—and sometimes no schools—have thrown up such a large percentage of 4-F's that we have had to turn to other sections to find men.

" 'More youths from New York, Connecticut, Massachusetts, California and Illinois will be killed in this war than would have been had we had reasonable educational opportunity.'

"Senator J. William Fulbright (D., Ark.) commented that 'this means our ablest men will be killed.'

"Assailing what he termed America's 'education slums,' Norton said more than half of the country's school children are given 'completely inadequate schooling. He said the 1940 census listed nearly 3,000,000 adults who had never attended any school, more than 10,000,000 adults classified as 'virtual illiterates,' and nearly 2,000,000 children from the ages of 6 to 15 who were not attending any kind of school.

PRYOR, Palo Alto, Calif.

Diseases of the Ductless Glands; Endocrinology

THE MAINTENANCE OF A NORMAL SERUM CALCIUM BY THE PARATHYROID GLAND IN NEPHRECTOMIZED DOGS. E. P. MONAHAN and SMITH FREEMAN, Am. J. Physiol. **142**:104 (Aug.) 1944.

A decrease in the serum calcium concentration, to about 50 per cent in seventy-two hours, was observed

nephrectomized-parathyroidectomized dogs. No ilar decrease was observed in nephrectomized con- s. The serum inorganic phosphorus and nonprotein ogen were greatly elevated in both groups. he evidence presented indicates that the parathyroid nds exert an influence on calcium metabolism that independent of the kidneys. NOURSE, Cleveland.

E MAINTENANCE OF MUSCLE GLYCOGEN IN FASTED HYPOPHYSECTOMIZED-ADRENALECTOMIZED RATS. LESLIE L. BENNETT and ROBERT Z. PARKINS, Endocrinology **36**:24 (Jan.) 1945.

Small daily doses of desoxycorticosterone acetate intained life and growth in adrenalectomized rats purified diets virtually free of sodium chloride. While there is no question that the effectiveness of tical extracts is enhanced by concomitant salt rapy, there is little to indicate that the essential ions of desoxycorticosterone in small doses cannot demonstrated with a low salt diet.

JACOBSEN, Buffalo.

ARIATIONS IN THE WATER CONTENT OF THE RAT'S UTERUS DURING CONTINUOUS ESTROGENIC TREATMENT. WILLIAM R. CARROLL, Endocrinology **36**: 266 (April) 1945.

Continuous stimulation with estrogen causes a rapid rease in the water content of the rat's uterus, fol- ved by a drop to an intermediate level, which is intained indefinitely. The water content of skeletal scle and liver is not affected by estrogen treatment.

JACOBSEN, Buffalo.

HE RESPONSE TO THYROXINE AFTER SUBTOTAL HEPATECTOMY. PETER E. KELLAWAY, HEBBEL E. HOFF and CHARLES P. LEBLOND, Endocrinology **36**:272 (April) 1945.

Thyroxin activity is greatly intensified in the absence the liver. The liver deals with excess hormone by process of inactivation.

JACOBSEN, Buffalo.

HE EFFECT OF GROWTH HORMONE ON THE VITAMIN A-DEFICIENT RAT. B. H. ERSHOFF and HARRY J. DEUEL JR., Endocrinology **36**:280 (April) 1945.

Administration of a growth-promoting extract of e anterior lobe of the pituitary failed to promote owth in plateaued rats deficient in vitamin A but used increased mortality and more pronounced symp- ms of vitamin A deficiency.

JACOBSEN, Buffalo.

Diseases of the Muscles, Bones, Joints and Lymph Glands

TUDIES ON DISEASES OF MUSCLES: I. PROGRESSIVE MUSCULAR DYSTROPHY; A CLINICAL REVIEW OF FORTY CASES. ROBERT E. SHANK, HELENA GILDER and CHARLES L. HOAGLAND, Arch. Neurol. & Psychiat. **52**:431 (Dec.) 1944.

"A clinical study of 40 patients with progressive uscular dystrophy gave evidence of the hereditary ture of the disease. Fourteen of the 40 patients ere from families in which other cases of the disease d occurred.

"The early onset of the disease was demonstrated, e first symptoms having been noted by 62 per cent this series of patients before the age of 10 years.

"The course of progressive muscular dystrophy was most rapid in patients with onset of the disease before the fifth year of life.

"There were characteristic changes in the roentgenograms of patients with progressive muscular dystrophy. These alterations include conspicuous streaking of the soft tissue shadows of affected muscle, delayed appearance of centers of ossification in the bones of the hands and in the epiphyses of the long bones and demineralization of other bony structures.

"The rate of excretion of creatine was greater and the rate of excretion of creatinine was less in boys with muscular dystrophy than in normal boys of the same age group who were maintained on diets of identical composition. These differences were increased when the subjects were fasting.

"The concentration of creatine in the plasma of dystrophic children was greater than the concentration in the plasma of normal subjects. Levels of creatinine in the plasma were unchanged."

BEVERLY, Chicago.

Skin Diseases; Allergy

ERYTHEMA MULTIFORME: ITS RELATIONSHIP TO HERPES SIMPLEX. NELSON PAUL ANDERSON, Arch. Dermat. & Syph. **51**:10 (Jan.) 1945.

The author cites 10 cases of recurrent erythema multiforme preceded by herpes simplex, in 2 of which children were affected. The author postulates a close relationship between the cause of the two types of dermatitis and suggests that erythema multiforme may be due to a virus. It is stated that repeated vaccinations with the cowpox virus appear to be of value in prevention of recurrent erythema multiforme associated with preceding herpes simplex.

MCINTOSH, Iowa City.

TREATMENT OF LUPUS ERYTHEMATOSUS DISSEMINATUS BY INTERNAL ADMINISTRATION OF IODINE. A. BENSON CANNON, Arch. Dermat. & Syph. **51**:26 (Jan.) 1945.

Five patients with disseminated lupus erythema erythematosus apparently made remarkable recoveries during a period of internal administration of iodine. The eruptions cleared entirely, and the constitutional symptoms were much relieved.

MCINTOSH, Iowa City.

ALOPECIA, POSSIBLY DUE TO ICHTHYOSIS. C. H. WHITTLE, Proc. Roy. Soc. Med. **37**:643 (Sept.) 1944.

The patient, a boy of 13 years, had suffered with scurfiness and inflammation of the scalp since he was 5 years old. The scalp was very scurfy and septic. The toe nails and thumb nails showed dirty discoloration, much thickening and roughening. The scalp responded well to local treatment with tar and sulfathiazole, but the patient remained under treatment for only a fortnight. When examined again four months later, he had lost considerable amounts of hair from the scalp, in patches 3 to 4 inches (7.5 to 10 cm.) in diameter, and there was much hyperkeratosis around the hair follicles in the affected bare and scurfy areas. The scales were thick, adherent and dry. The nails showed gross thickening, gray discoloration and accumulation of debris under their free margins. The eyebrows and eyelashes were partly gone. The skin was dry and

showed mild ichthyosis. The child was small for his age and was active and athletic.

The diagnosis was keratosis pilaris, a form of ichthyosis, of unknown cause.

WILLIAMSON, New Orleans.

FAVUS. H. J. WALLACE, Proc. Roy. Soc. Med. **37**:646 (Sept.) 1944.

This case was that of a child of 6 years, who had lived in Woking, England, all his life.

WILLIAMSON, New Orleans.

Miscellaneous

WORK IN THE HEAT AS AFFECTED BY INTAKE OF WATER, SALT, AND GLUCOSE. G. C. PITTS and R. E. JOHNSON, Am. J. Physiol. **142**:253 (Sept.) 1944.

1. The best performance of fully acclimatized young men receiving a good daily diet and performing intermittent hard work in the heat is achieved by replacing hour by hour the water lost in sweat. Any amount of water considerably less than this leads in a matter of hours to serious inefficiency, and eventually to exhaustion.

2. Replacement of sodium chloride hour by hour under such circumstances has no demonstrable advantage.

3. Administration of dextrose is of little, if any, advantage as compared with the great benefit of large amounts of water.

4. When practical problems of transportation and supply, lack of appreciation of the importance of water and salt or the anorexia which is so common in hot environments interfere with adequate intake, it may become desirable to supply salt in the drinking water or, less satisfactorily, in the form of tablets.

NOURSE, Cleveland.

THE EFFECT OF CAFFEINE UPON GASTRIC SECRETION IN THE DOG, CAT, AND MAN. J. A. ROTH and A. C. IVY, Am. J. Physiol. **141**:454 (June) 1944.

Caffeine, administered intramuscularly or by the oral route, stimulates gastric secretion in man.

NOURSE, Cleveland.

CLINICAL ACTIONS OF ETHYLNORSUPRARENIN. M. L. TAINTER, W. M. CAMERON, L. J. WHITSELL and N. M. HARTMAN, J. Pharmacol & Exper. Therap. **81**:269 (July) 1944.

The drug ethylnorsuprarenin (1-[3,4-dihydroxyphenyl]-2-amino-1-butanol) is a sympathomimetic amine that closely resembles epinephrine in many of its actions. For animals it is less than 1 per cent as toxic as epinephrine. In suitable doses it may be injected into patients parenterally, with prompt and fairly lasting effect (up to one hour). It is clinically as effective as epinephrine in the relief of asthma, with fewer and less marked troublesome side actions, a property that would be greatly appreciated by patients sensitive to the si actions of epinephrine.

PILCHER, Cleveland.

COMPARATIVE ANTICONVULSIVE ACTION OF 3, 5, 5-TI METHYLOXAZOLIDINE-2, 4-DIONE (TRIDIONE), DILA TIN [DIPHENYLHYDANTOIN SODIUM] AND PHEN BARBITAL. GUY M. EVERETT and RICHARD RICHARDS, J. Pharmacol. & Exper. Therap. **81**:4 (Aug.) 1944.

It was found that this drug (tridione) had a defini antagonistic action against experimental convulsions animals produced by such drugs as metrazol, strychni and cocaine. The authors wisely note that "the co vulsions resulting from drugs are not generally co sidered to be characteristic of the seizures occurri in clinical cases. However, they have as a comm feature the presence of a hyperexcitable state of so portion of the central nervous system. Thus, the mo of depression of this excitability by antagonistic dru may be similar in both instances, although the site action possibly differs." Tridione is an analgesic, well as an anticonvulsant, but is not a true hypnoti

PILCHER, Cleveland.

TRANSMISSION OF PENICILLIN THROUGH HUMAN PL CENTA. HARRY J. GREENE and GLADYS L. HOBB Proc. Soc. Exper. Biol. & Med. **57**:282 (Nov 1944.

Four pregnant women in active labor were giv penicillin dissolved in isotonic solution of sodium chlori intravenously two hours before the expected time delivery; samples of the mothers' blood were take periodically, and samples of maternal and cord blo were obtained at the time of delivery. The blood w allowed to stand overnight, and the serum was th removed and tested for the presence of penicillin. Whe 100,000 units was injected, the concentration in the co blood was relatively high, even though two hours ha elapsed since the administration. When 20,000 uni was given, the concentration in the cord blood on half hour later was sufficient to inhibit sensitive bac teria; but by the end of one hour insignificant amoun were present. Except in 1 instance, the penicillin lev in cord blood was lower than that in maternal blood There was no evidence of toxicity to the mother o the baby.

HANSEN, Galveston, Texas.

OXYGEN THERAPY IN MODERN PEDIATRICS. C. LOR ESTRADA, Rev. mex. de pediat. **13**:1 (Jan.-March 1944.

Basic principles in the physiology, chemistry an pathologic physiology of the transportation and distri bution of oxygen are discussed. The accepted method of administration of oxygen, alone and in combinatio with gases, are described, and indications for oxyge therapy are given. The beneficial effects of this treat ment were witnessed by the author in 183 infants an children who suffered from various conditions asso ciated with anoxemia.

ABALLI, Habana, Cuba.

Book Reviews

utrición Infantil: Sus fundamentos fisiologicos. By Dr. Alvaro Silva. Price, not given. Pp. 296, with 16 illustrations and numerous tables. Habana, Cuba: Seoane, Fernández y Cía., 1944. (Procurable only from Manuel V. Fresneda, Neptuno no. 565, Habana, Cuba.)

The importance of Dr. Silva's monograph to the ban physician is indicated by the facts that it received e Diego Tamayo prize for 1944 from the Habana ciety for Clinical Investigation and is prefaced by introduction from the pen of Dr. Octavio Montoro. As to the monograph itself, it is a first-rate textbook count of infant nutrition as it is viewed today in orth America. Of the eighty key references cited in e bibliography, fifty-eight are to the North American erature.

The tone of the book is didactic. Its thirty-five apters deal in an orderly manner with the general quirements for energy imposed by growth and the ore specific demands made by development. The ysiologic details of the metabolism of total energy, otein, carbohydrate, fat, water and minerals are each ven due attention. The vitamins from A through K ceive special consideration.

Having discussed physiology, Dr. Silva turns to the wn to earth details of feeding babies. Nursing at east and the several kinds of artificial feeding are nsidered, with proper attention to minutiae.

The last eight chapters are given over to the clinical pects of deficiencies caused by lack of several vitamins d of protein.

Since the tone is strictly that of a textbook, little rgumentative material is included. There are a number f errors: "The normal values for vitamin D in serum re not known exactly." This statement disregards Varkany's measurements, which have established these alues as accurately as is required for clinical purposes. The viscus which is richest in vitamin D is the liver . ."; the mammalian liver has not yet been shown store vitamin D in significant amounts. The absence f any discussion of rickets provokes thought. Although he privational species may be presumed not to occur n Cuba, the other types must be seen. Since these imulate defect of nutrition, they should not be ignored n any text which pretends to tell the whole story. There are many typographic errors in spelling of non-Spanish words and names. This is a familiar feature f all international journalism. Exact bibliography is tedious accomplishment, but it should be cultivated nore sedulously.

These few technical criticisms disregarded, Dr. Silva eserves to be congratulated for having put together book which is at the same time readable, informed nd competent to guide the practicing physician in the cience of feeding infants.

Essentials of Allergy. By Leo H. Criep, M.D. With a foreword by Robert A. Cooke, M.D. Price, $5. Pp. 381, with 42 black and white illustrations and 1 color plate. Philadelphia: J. B. Lippincott Company, 1945.

This is a good little book. A medical student could et a better idea of what allergy is from it more quickly, more clearly and with less inconvenience to himself than from any other single source with which the reviewer is familiar.

The book is divided into seventeen chapters. The first three (56 pages) present a clear and reasonable discussion of hypersensitiveness, anaphylaxis and the mechanism of allergy.

The next twelve chapters discuss the usual allergic diseases; the fourteenth chapter is devoted to allergy in children, and the seventeenth, to diagnostic cutaneous tests, such as the tuberculin test, the Schick test and the coccidioidin test. The paper, illustrations and typography are excellent, and the book is small enough to be held easily in the hand. At the end of each chapter are a short summary and a bibliography. Great pains have been taken to arrange the subject matter in a clear and orderly manner, and the book is therefore easy to read and to understand. Case histories illustrating most allergic disorders are given in each chapter. These are valuable and should be of much help to the beginner in allergy; however, inasmuch as most of the patients were cured, he is likely to obtain a somewhat erroneous idea of therapeutic results in the practice of allergy. Unfortunately, many allergic patients are not cured.

One excellent feature is that there are no references in the text, nor are controversial questions discussed. The prevailing opinions are stated, without specifying who instituted them or who subscribes to them and who does not. No procedures are discussed or recommended which would not be approved by the majority of allergists. In short, Dr. Criep has accomplished what several others have tried to do unsuccessfully: He has put into a small book in a very clear and surprisingly comprehensive manner a survey for the beginner of an extremely complicated and controversial subject.

Too little space is given to the specific treatment of hay fever and to the treatment of an asthmatic attack, which are two of the most important procedures in allergy. The bibliographies at the end of each chapter take up a good deal of space and are of little value in a book of this type. They might well have been omitted. But these are minor defects, and the reviewer heartily recommends this book. It is the best small book on allergy.

Bronchial Asthma. By Leon Unger, B.S., M.D., F.A.C.A., Assistant Professor, Department of Medicine, Northwestern University Medical School, Chicago. Price, $9. Pp. 730, with 126 figures. Springfield, Ill.: Charles C Thomas, Publisher, 1945.

This volume is devoted to the study of bronchial asthma. In large part it is really a study of the whole field of allergy, for this symptom complex is the predominant disease caused by hypersensitiveness.

Unger, like many other writers on this subject, speaks from a rich experience. Although the bibliography is extensive, the views of others are treated summarily, and the text is largely an expression of the author's personal views. Hence one finds views expressed that can be challenged.

It is a volume that reads well, and the busy practitioner, who has little time to delve too deeply, will

find in it much information that will stand him in good stead in the management of this trying and complicated disease. One finds herein ready answers to pressing questions. It can be recommended to the general practitioner as a sound and helpful treatise.

However, the pediatrician, whose greatest function is in the field of preventive medicine, will find little help with the problems of childhood allergy. It is in childhood that asthma takes root, and in this sense bronchial asthma can be considered primarily a disease of childhood. Allergy first asserts itself, often in earliest infancy, in the form of repeated episodes involving the upper respiratory tract and the eyes, dermal manifestations, such as eczema and urticaria, and gastrointestinal upsets. If untreated these conditions often lead to asthma. Determination of the causes of these early syndromes will therefore serve as the greatest boon, for if allergy were treated at its inception, there would be a tremendous reduction of the number of cases of asthma in adults. The task of amelioration and eradication at its inception devolves on the pediatrician, and it therefore behooves him to know the details of its genesis. This phase of the problem does not receive adequate consideration to make the book one of value to the pediatrician.

The Chemistry and Technology of Food and Food Products. Volume I. Edited by M. B. Jacobs, Ph.D., Senior Chemist, New York City Department of Health. Price, $10.50. Pp. 950, with 79 illustrations and 218 tables. New York: Interscience Publishers, Inc., 1944.

This is one of two volumes which present "an exhaustive treatment of the chemistry and technology of food and food products." As the preface states, "The extensive expansion in almost every field in the theoretical and applied sciences has made it very difficult for a single individual to survey any given field adequately." Twenty-one chemists, biochemists, food technologists, bacteriologists, public health officials and others have each contributed a discussion of a phase of the subject in which he is considered an expert.

This volume presents two of the six parts that make up this two volume work. The first of these two parts deals with fundamentals of the chemistry, nomenclature, classification and metabolism and gives much other valuable information about the nutritive constituents of foods. It also shows some of the relations between food constituents and organic compounds produced within the organism. The fate of foodstuffs within the body is discussed, and a bacteriologist's explanation of food spoilage and food poisoning is given.

The 500 or more pages that make up Part II deal entirely with foods, milk, meat, fish, poultry, oils and grains being some of the subjects covered. The discussions include their history, statistics, standards, composition, chemistry and place in nutrition. A vast amount of valuable material is presented in a concise, easily understandable style. The material is well arranged and indexed, so that the information is readily available. Many persons will find this an excellent reference book.

Approved Laboratory Technic. By John A. Kolmer, M.D., and Fred Boerner, V.M.D. Fourth edition. Price, $10. Pp. 1,017, with 346 figures and 54 tables. New York: D. Appleton-Century Company, Inc., 1945.

This edition, following the third by four years, is considerably amplified, covering new material in the field of medical laboratory procedures as well as addi many useful charts and illustrations. If one keeps mind the possibility of errors of omission in so co prehensive a technical book and the rapid developme of newer methods, this is no doubt the most usef general reference book for medical technologists.

It is, of course, not a complete laboratory manu in any one subject. It omits, for example, details Salmonella and Shigella typing now in wide use, a it gives some misleading statements, such as the impl cation of the value of stained smear diagnosis Trichomonas vaginalis. There is no discussion of toxo plasmosis and only a bare mention of histoplasmos The hematologic illustrations do not compare with th excellent charts and the text in this field. Because condensation, the book could not be of comparable val to the medical teacher and student.

New material in the volume is found in the field chemistry, parasitology and mycology, the processing blood plasma, the assay of endocrine substances, vita mins and penicillin and the frog diagnosis of pregnancy to mention a few.

The organization of the book, the carefully prepare index and the concise writing bear witness to the year of experience of the writers.

The Embryology of Behavior: The Beginnings the Human Mind. By Arnold Gesell, M.D., an Catherine S. Amatruda, M.D. Price, $5. Pp. 28 with 78 illustrations and 44 plates. New York Harper & Brothers, 1945.

Gesell and Amatruda have brought together th known facts about the behavior of the fetus and adde their own observations. From the study of premature born infants they have learned much about the norma growth patterns before birth and their relations to th behavior of the normal infant born at full term. Ther is the usual number of extremely valuable photograph of fetal and neonatal infants.

In addition to a general description of the growth fetal behavior, chapters are devoted to breathing be havior, sleep schedules, species and individual differences and there is an important appendix on the develop mental age.

Life as a growth cycle is emphasized in this volume even more than in the previous writings of the author. The changing (living) aspects of embryology and morphology are presented in such a way that these subjects have more meaning and a closer relationship to behavior than in any previous volume.

Like the seventeen previously written books of Gesell and his co-workers, this volume is a masterpiece in clarity, objectiveness and scientific correctness.

Doctors at War. Edited by Morris Fishbein, M.D. Price, $5. Pp. 418, with 82 photographs, plus charts and diagrams. New York: E. P. Dutton & Co., Inc., 1945.

"Doctors at War" will interest all Americans and especially those who have members of their families in the armed services. Parents and relatives reading this book will appreciate the great effort which has been put forth to assure members of the armed services the highest quality of medical care and protection ever rendered any group under any circumstances.

It is a splendid résumé of the many phases of medical activity involved in establishing and maintaining the largest military force this nation has ever created.

Each section of the book is written by the outstanding medical authority charged with the particular activity

cussed, and this makes the material presented authoritive and assures the reader of a well rounded picture the work.

Every one reading this volume will gain an insight to the tremendous task involved. That such an undering could be carried out in the time available, with e sensational results recorded in the prevention of idemics and the saving of lives from disease and ttle wounds, is a lasting tribute to the ability of the embers of the medical, dental and allied professions ho made it possible.

rauma in Internal Diseases. By Rudolf A. Stern, M.D. Price, $6.75. Pp. 575. New York: Grune & Stratton, Inc., 1945.

This volume is a comprehensive review of the medil literature regarding the effect that trauma may ay in causing internal disease. The book is divided to twenty chapters, each giving consideration to special organ or group of organs. The text consts almost entirely of case reports and court rulings ncerning the effect of injury and its relationship disease. The author has attempted to point out e medicolegal significance of individual cases.

Many controversial problems are thoroughly preented, as, for example, the importance of psychic auma in the causation of coronary thrombosis and eptic ulcer. The present reviewer does not accept e idea that essential hypertension, as discussed in is book, can be the result of injury, nor does he oncur with the author in his opinion that acute toxic epatitis, or, as stated in this text, "catarrhal jaunice," can be the result of trauma.

The book may be considered a valuable reference or the physician whose work is primarily of a medicogal nature but is of little practical value to one who practicing clinical medicine.

ectures on Diseases of Children. By Sir Robert Hutchison, M.D., and Alan Moncrieff, M.D. Price, $6.75. Pp. 478, with 108 illustrations. Baltimore: Williams & Wilkins Company, 1944.

The lectures on which this book is based were origially delivered by Sir Robert Hutchison at the London Hospital. The first edition was published in 1904. The evision in the present edition, the ninth, is entirely the ork of Dr. Moncrieff. The lecture form has been etained, and the direct, friendly and intimate style ffords delightful reading. The rich clinical experience nd keen judgment of the authors give to the book a olidity often lacking in a work which is as short as his one and yet covers so wide a field. Almost all he diseases and abnormalities of infancy and childhood re considered, as are the feeding and care of the infant nd the older child. Growth and development are also ouched on, but are not considered to the same extent s in most modern textbooks. The emphasis throughout is on practical considerations and treatment. The llustrations are good and the index adequate. The ook may be highly recommended for students, and even he experienced pediatrician may find in it much of nterest.

Contagious Diseases: A Guide for Parents. By W. W. Bauer, M.D. Second edition. Price, $2.75. Pp. 188. New York: Alfred A. Knopf, Inc., 1944.

In this book of 188 pages is contained subject matter of inestimable value to parents and lay persons responsible for child care. It answers most of the questions that relatives ask the physician, especially about quarantine and the reasons for quarantine. Hints on home nursing are given, and such diseases as scarlet fever, measles, whooping cough, rabies, poliomyelitis, colds, itch, tuberculosis and those occurring in the tropics are discussed or at least referred to. The author also stresses immunization against diphtheria and vaccination against smallpox. The text clarifies many misconceptions about disease. It is a small book, which can be easily read and understood by most parents. It is an ideal book for the physician to recommend to his patients, a book with which he should be familiar and which he should have on his shelves.

The Avitaminoses. By Walter H. Eddy, Ph.D., and Gilbert Dalldorf, M.D. Price, $4.50. Pp. 438, with 67 plates, 46 figures and 38 tables. Baltimore: Williams & Wilkins Company, 1944.

As is stated by the authors, this book is written to provide a helpful manual rather than a complete treatise. In this respect the book will be helpful to medical students, nutritionists and dietitians. The clinician, particularly, may learn much from Part I, which deals with the nature and functions of the vitamins. The clinician will, however, find many lacunas in Part II, which deals with the clinical aspects of the avitaminoses. Unfortunately, the clinical methods are not sufficiently up to date to provide the clinician with the most modern and readily applicable clinical procedures.

Pediatric Nursing. By Abraham Levinson, B.S., M.D. Third edition. Price, $3. Pp. 299, with 53 figures. Philadelphia: Lea & Febiger, 1945.

Used in correlation with supplementary readings and enriched by a series of lectures on pediatrics this book would yield a comprehensive knowledge of the realm of pediatrics. There is direct presentation with a concise and compact integration and summary of important factors, which furnishes the student an ever accessible reference. The contribution of the author in his discussion of the nurse's responsibilities and duties and especially her compensations in dealing with children is interesting and profitable.

El trabajo de un médico rural frente al problema del niño. By Pastor Oropeza. No price given. Pp. 112. Caracas, Venezuela: Editorial Grafolit, C. A., 1945.

This is a concise textbook on the physiology and anatomy of infants, with a summary of the diagnosis and treatment of various digestive disturbances that are met with in the rural districts of Venezuela. It is written, in Spanish, for the general practitioner.

Directory of Pediatric Societies *

INTERNATIONAL

International Association of Preventive Pediatrics

President: Prof. S. Monrad, Dronning Louises Børnehospital, Copenhagen, Denmark.
Secretary: Dr. Daniel Oltramare, 15 Rue Lévrier, Geneva, Switzerland.

International Congress of Pediatrics

President: Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn.
Secretary-General: Dr. L. Emmett Holt Jr., 477 First Ave., New York 16.
Canadian Committee:
Chairman: Dr. Alan Brown, Hospital for Sick Children, 67 College St., Toronto.
Secretary: Dr. H. P. Wright, 1509 Sherbrooke St. W., Montreal.
Place: New York. Time: Postponed indefinitely.

International Congress for the Protection of Infancy

Secretary: Prof. G. B. Allaria, Corso Bramante 29, Torino 120, Italy.

FOREIGN

Argentine Pediatric Society of Buenos Aires

President: Dr. Martin Ramón Arana, 1809 Rodriguez Peña, Buenos Aires.
General Secretary: Dr. Alfredo Larguia, Cerrito 1179, Buenos Aires.

Associação Paulista de Medicina, Section on Pediatrics

President: Dr. Vicente Laro.
First Secretary: Dr. Armando de Arruda Sampalo.
Second Secretary: Dr. Luiz Augusto de Toledo, Av. Brigadeiro Luiz Antonio 393, 1° Andar, São Paulo, Brazil.
Time: Twelfth of every month, 8:30 p. m.

British Paediatric Association

President: Prof. L. G. Parsons, 58 Calthorpe Rd., Five Ways, Birmingham.
Secretary: Dr. Donald Paterson, 27 Devonshire Pl., London, W. 1.

Danish Pediatric Society

President: Dr. E. Lenstrup, Copenhagen.
Secretary: Dr. E. Gjørup, Dronning Louises Børnehospital, Copenhagen.

Nederlandische Vereeniging voor Kindergeneeskunde

President: Dr. J. H. G. Carstens, Servaasbolwerk 14a, Utrecht.
Secretary: Dr. R. P. van de Kasteele, Laan van Poot 340, 's Gravenhage.
Place: Different places. Time: Three times a year.

Paediatrický Spolok na Slovensku

President: Dr. A. J. C. Chura, Lazaretská 11, Bratislava
Secretary: Dr. P. Rados, Lazaretská 6, Bratislava.
Place: Pediatric Clinic, University Bratislava. Time: Six times year.

Royal Society of Medicine, Section for the Study of Disease in Children

President: Dr. E. A. Cockayne, 98 Harley St., London W. 1, England.
Secretary: Dr. R. Lightwood, 86 Brook St., London W. 1, England.
Place: 1 Wimpole St., London. Time: Fourth Friday of each month, 4:15 p. m.

Palestine Jewish Medical Association, Section of Physicians of Children's Diseases

President: Prof. S. Rosenbaum, 26 Bialkstr., Tel Aviv
Secretary: Dr. A. Brünn, 9 Maazestre, Tel Aviv.

Sociedad Cubana de Pediatria

President: Dr. Angel A. Aballí Arellano, 17 No. 6 Vedado, Habana.
Secretary: Dr. Julio G. Cabrera Calderin, Hospital Mercedes L y 21 (Vedado), Box 2430, Habana.
Place: Cátedra de Clinica Infantil, Hospital Mercedes Habana. Time: Last Wednesday of every month.

Sociedad Mexicana de Pediatria

President: Dr. Fernando López Clares, 12/a. Medellin 191, Mexico.
Secretary: Dr. Jesus Gómez Pagola, Versalles 6 Mexico.

Sociedad de Pediatría de Santiago de Cuba

President: Dr. Antonio Beguez César, Sagarra 10 Santiago de Cuba.
Secretary: Dra. Susana Texido Vaillant, Padre Pi 57, Santiago de Cuba.
Place: Colegio Médico.

Sociedad Venezolana de Puericultura y Pediatria

President: Dr. E. Santos Mendoza.
Secretary: Dr. P. Oropeza, Hospital de Niños, Caraca

Société de Pédiatrie de Paris

President: Dr. B. Weill-Hallé, 49 Avenue Raymon Poincaire, Paris, France.
Secretary: Dr. Jean Hallé, 10 bis Rue Pré aux Cler Paris, France.
Place: Hôpital des Enfants Maladies, 49 Rue de Sèvr Time: 4:30 p. m., third Thursday of every month

Uruguayan Society of Pediatrics

President: Dr. José Alberto Praderi, Eduardo Acevedo 1132, Montevideo.
Secretary: Dr. Héctor Fossatti, Durazno 1882, Montevideo.

* Secretaries of societies are requested to furnish the information necessary to make this list complete and to keep it up to date.

NATIONAL

American Medical Association, Scientific Assembly, Section on Pediatrics

hairman: Dr. John Aikman, 184 Alexander St., Rochester, N. Y.

ecretary: Dr. Gilbert J. Levy, 188 S. Bellevue Blvd., Memphis, Tenn.

compliance with the request of the Office of Defense Transportation and in the interest of the national war effort a meeting will not be held in 1945.

American Academy of Pediatrics

esident: Dr. Joseph S. Wall, 1864 Wyoming Ave. N. W., Washington, D. C.

ecretary: Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill.

American Hospital Association, Children's Hospital Section

hairman: Dr. Joelle C. Hiebert, 299 Main St., Lewiston, Maine.

ecretary: Dr. W. Franklin Wood, McLean Hospital, Waverly, Mass.

American Pediatric Society

esident: Dr. C. Anderson Aldrich, Mayo Clinic, Rochester, Minn.

ecretary-Treasurer: Dr. Hugh McCulloch, 325 N. Euclid Ave., St. Louis 8.

Canadian Society for the Study of Diseases of Children

esident: Dr. H. S. Little, 300 Dufferin Ave., London, Ontario.

ecretary-Treasurer: Dr. Elizabeth Chant Robertson, 67 College St., Toronto 2.

Society for Pediatric Research

esident: Dr. Edward M. Bridge, 219 Bryant St., Buffalo, N. Y.

ecretary: Dr. Mitchell I. Rubin, 1740 Bainbridge St., Philadelphia 46.

SECTIONAL

Intermountain Pediatric Society

esident: Dr. Robert Alway, University of Utah School of Medicine, Salt Lake City 2.

ecretary-Treasurer: Dr. L. Paul Rasmussen, 1020 Boston Bldg., Salt Lake City 1.

lace: Salt Lake City General Hospital. Time: First Thursday of each month, 8 p. m.

New England Pediatric Society

esident: Dr. William P. Buffum, 122 Waterman St., Providence, R. I.

ecretary-Treasurer: Dr. James Marvin Baty, 1101 Beacon St., Brookline, Mass.

lace: Boston Medical Library. Time: Three meetings a year, occurring from September to May.

North Pacific Pediatric Society

esident: Dr. M. L. Bridgeman, 1020 S. W. Taylor St., Portland, Ore.

ecretary: Dr. C. G. Ashley, 833 S. W. 11th Ave., Portland, Ore.

Northwestern Pediatric Society

President: Dr. George B. Logan, 102 Second Ave. S. W., Rochester, Minn.

Secretary-Treasurer: Dr. Northrop Beach, 1009 Nicollet Ave., Minneapolis.

Place: Minneapolis, St. Paul, Duluth and Rochester. Time: January, April, July and October.

Rocky Mountain Pediatric Society

President: Dr. G. R. Fisher, 23 E. Pikes Peak Ave., Colorado Springs, Colo.

Secretary: Dr. Joseph H. Lyday, 1850 Gilpin St., Denver.

Southern Medical Association, Section of Pediatrics

Chairman: Dr. William Weston Jr., 1428 Lady St., Columbia, S. C.

Secretary: Dr. Angus McBryde, 604 W. Chapel Hill St., Durham, N. C.

STATE

Alabama Pediatric Society

President: Dr. Jerome C. Chapman, 2160 Highland Ave., Birmingham.

Secretary-Treasurer: Dr. Ruth Berrey, 2021–6th Ave. N., Birmingham.

Arizona Pediatric Society

President: Dr. Vivian Tappan, San Clemente, Tucson.

Secretary: Dr. Hilda Kroeger, Arizona State Health Dept. (Maternal and Child Welfare Division), Phoenix.

Arkansas State Pediatric Association

Chairman: Dr. C. B. Billingsley, 1425 N. 11th St., Fort Smith.

Secretary: Dr. R. E. Weddington, 1425 N. 11th St., Fort Smith.

California State Medical Society, Section on Pediatrics

Chairman: Dr. Charles W. Leach, 2000 Van Ness Ave., San Francisco 9.

Secretary: Dr. Chester I. Mead, 1930 Truxton Ave., Bakersfield.

Florida State Pediatric Society

President: Dr. Ludo Von Meysenbug, Box 3356, Daytona Beach.

Secretary: Dr. Robert Blessing, 409 Blount Bldg., Ft. Lauderdale.

Place: Concurrent with state association meeting at time of convention.

Georgia Pediatric Society

President: Dr. Ruskin King, 10 W. Taylor St., Savannah.

Secretary-Treasurer: Dr. Don F. Cathcart, 478 Peachtree St. N. E., Atlanta.

Hezekiah Beardsley Pediatric Club of Connecticut

President: Dr. Edward T. Wakeman, 129 Whitney Ave., New Haven.

Secretary: Dr. Herman Yannet, Southbury Training School, Southbury.

Time: Three meetings a year.

Illinois State Medical Society, Section on Pediatrics

Chairman: Dr. Craig D. Butler, 715 Lake St., Oak Park.
Secretary: Dr. A. J. Fletcher, 139 N. Vermilion, Danville.

Indiana State Pediatric Society

President: Dr. K. T. Knode, 1105 E. Jefferson Bldg., South Bend.
Secretary-Treasurer: Dr. Mathew Winters, 621 Hume Mansur Bldg., Indianapolis.
Time: Two meetings a year.

Iowa Pediatric Society

President: Dr. Mark L. Floyd, Children's Hospital, Iowa City.
Secretary-Treasurer: Dr. James Dunn, Davenport Bank Bldg., Davenport.

Medical Society of State of New York, Section on Pediatrics

Chairman: Dr. Carl H. Laws, 12 Pierrepont St., Brooklyn, N. Y.
Secretary: Dr. George R. Murphy, 292 Madison Ave., New York.
Place: Same as State Society. Time: Same as State Society.

Medical Society of the State of Pennsylvania, Pediatric Section

Chairman: Dr. Elwood W. Stitzel, 403 Central Trust Bldg., Altoona, Pa.
Secretary: Dr. P. F. Lucchesi, Philadelphia Hospital, Philadelphia.

Michigan State Medical Society, Pediatric Section

Chairman: Dr. Donald J. Barnes, 3001 W. Grand Blvd., Detroit, Mich.
Secretary: Dr. Mark F. Osterlin, Central Michigan Children's Clinic, Traverse City.
Place: Detroit. Time: September 1945.

Mississippi State Pediatric Society

President: Dr. Harvey F. Garrison Jr., 315 E. Capitol Pl., Jackson.
Secretary: Dr. Guy Verner, 126 N. Congress St., Jackson.

Nebraska Pediatric Society

President: Dr. John L. Gedgoud, University of Nebraska Hospital, Omaha.
Secretary-Treasurer: Dr. Gerald C. O'Neil, 640 City National Bank Bldg., Omaha.
Place: As announced by committee. Time: Third Thursday of each month from October to June, inclusive. Dinner at 6 p. m.

New Hampshire Pediatric Society

President: Dr. MacLean J. Gill, 14 N. State St., Concord.
Secretary-Treasurer: Dr. Ursula G. Sanders, 46 Pleasant St., Concord.
Time: Twice yearly.

North Carolina Pediatric Society

President: Dr. Arthur H. London Jr., 1105 W. M St., Durham.
Secretary: Dr. Jay M. Arena, Duke Hospital, Durh

Northern California Pediatric Society

President: Dr. John Mott Rector.
Secretary: Dr. George Bates, 490 Post St., S Francisco.
Place: San Francisco. Time: Second Thursday February, April, September and November.

Oklahoma State Pediatric Society

President: Dr. G. R. Russell, 604 S. Cincinnatti A Tulsa, Okla.
Secretary: Dr. Luvern Hays, 108 W. 6th St., Tu
Place: With Oklahoma State Medical Associati
Time: Annual Meeting.

South Carolina Pediatric Society

President: Dr. Lonita Boggs, 301 E. Coffee St., Gre ville.
Secretary-Treasurer: Dr. Hilla Sheriff, 429 W Hampton Office Bldg., Columbia 10.

Texas Pediatric Society

President: Dr. F. H. Lancaster, 4409 Fannin S Houston.
Secretary-Treasurer: Dr. John E. Ashby, 3610 Fa mount Ave., Dallas.

Virginia Pediatric Society

President: Dr. L. E. Sutton Jr., Medical College H pital, Richmond.
Secretary: Dr. Emily Gardner, 1100 W. Franklin S Richmond 20.

West Virginia State Medical Society, Section on Pediatrics

President: Dr. Andrew Amick, 1021 Quarrier S Charleston.
Secretary: Dr. A. A. Shawkey, Professional Bl Charleston.

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Academy of Medicine of Cleveland Pediatric Section

Chairman: Dr. Charles L. Ruggles, 10515 Carnegie Av Cleveland.
Secretary: Dr. Walter Heymann, 2103 Adelbert R Cleveland.
Place: Cleveland Medical Library Bldg. Time: 8: p. m., October, December, February and April.

Academy of Medicine, Toronto, Section of Pediatrics

President: Dr. John M. Ross, 530 St. Claire Ave. W Toronto, Canada.
Secretary: Dr. J. H. Ebbs, 13 Queen's Park, Toron Canada.
Place: Academy of Medicine. Time: Third Thurs of each month.

Bronx Pediatric Society

President: Dr. Jacob H. Turner, 121 W. 197th St., New York.

Secretary: Dr. Harry S. Pizer, 1726 Davidson Ave., New York.

Place: Concourse Plaza Hotel, 161st St. and Grand Concourse. Time: Second Wednesday of each month, except June, July, August and September.

Brooklyn Academy of Pediatrics

President: Dr. Kenneth G. Jennings, 159 Midwood St., Brooklyn.

Secretary: Dr. Joseph Battaglia, 713 Bushwick Ave., Brooklyn 21.

Place: Granada Hotel. Time: 8:45 p. m., fourth Wednesday of each month except May, June, July, August and September.

Buffalo Pediatric Society

President: Dr. A. Wilmot Jacobsen, 187 Bryant St., Buffalo, N. Y.

Secretary: Dr. Richard A. Downey, 786 Forest Ave., Buffalo 9, N. Y.

Place: Children's Hospital, 219 Bryant St. Time: 8:30 p. m., first Monday of each month from September to June.

Central New York Pediatric Club

President: Dr. Arthur W. Benson, 2 St. Pauls St., Troy.

Secretary Dr. Frank J. Williams, 58 S. Swan St., Albany.

Places: Various cities in New York. Time: Third Tuesday of April and October.

Chicago Pediatric Society

President: Dr. Louis W. Sauer, 636 Church St., Evanston, Ill.

Secretary: Dr. Henry G. Poncher, 1819 W. Polk St., Chicago.

Place: Children's Memorial Hospital, 710 Fullerton Ave. Time: Third Tuesday of each month, October to May, inclusive.

Cincinnati Pediatric Society

President: Dr. Theodore K. Selkirk, 3605 Edwards Rd, Cincinnati.

Secretary: Dr. John H.. Hunt, Kemper Lane Bldg.

Place: Children's Hospital, Elland Ave., Cincinnati. Time: On call.

Dallas Pediatric Society

President: Dr. Robert A. Knox, 3701 Fairmount Ave., Dallas 4, Texas.

Secretary-Treasurer: Dr. Gladys J. Fashena, 4585 Belfort Pl., Dallas 4, Texas.

Place: Children's Medical Center. Time: 1 p. m., second and fourth Saturdays of each month.

Detroit Pediatric Society

President: Dr. Philip J. Howard, 2977 W. Grand Blvd., Detroit, Mich.

Secretary: Dr. John C. Montgomery, 564 Fisher Bldg., Detroit 2, Mich.

Place: Wayne County Medical Society. Time: 8:30 p. m., second Wednesday of each month, four meetings a year.

Fulton County Medical Society, Pediatrics Section (Atlanta, Ga.)

Chairman: Dr. Don F. Cathcart, 478 Peachtree St. N. E., Atlanta.

Secretary: Dr. Harry Lange, 478 Peachtree St. N. E., Atlanta.

Place: Academy of Medicine, 38 Prescott St. N. E. Time: Second Thursday of each month from October to April, 8 p. m.

Houston Pediatric Society

President: Dr. Raymond Cohen, 2300 Caroline St., Houston, Texas.

Secretary: Dr. Betty Moody, 526 Richmond Rd., Houston, Texas.

Place: College Inn, Houston. Time: Fourth Monday of each month.

Kansas City (Missouri) Pediatric Society

President: Dr. Edwin H. Schorer, 1103 Grand Ave., Kansas City.

Secretary: Dr. H. E. Petersen, Kirkpatrick Bldg., St. Joseph, Mo.

Place: Kansas City General Hospital. Time: On call.

Los Angeles County Medical Association, Pediatric Section

President: Dr. Milo B. Brooks, 1033 Gayley Ave., West Los Angeles.

Secretary-Treasurer: Dr. Elena Boder, 1830½ Lucille Ave., Los Angeles 26.

Place: Los Angeles County Medical Headquarters, 1925 Wilshire Blvd. Time: Second Monday of February, April, June, October and December.

Medical Society of the County of Kings and the Academy of Medicine of Brooklyn, Pediatric Section

President: Dr. Abraham M. Litvak, 1145 Eastern Parkway, Brooklyn.

Secretary: Dr. Harold Levy, 750 St. Marks Ave., Brooklyn.

Place: 1313 Bedford Ave., Brooklyn. Time: 9:00 p. m., fourth Monday of each month, October to April, inclusive.

Medical Society of the County of Queens, Inc., Section on Pediatrics

Chairman: Dr. Meyeron Coe, 217-02-91st Ave., Queens Village, N. Y.

Secretary-Treasurer: Dr. Edith A. Mittell, 144-38th Ave., Flushing, N. Y.

Place: Queens County Medical Bldg., Forest Hills, N. Y. Time: Third Monday of October, January, March and May.

Medical Society of the District of Columbia, Section on Pediatrics

President: Dr. Harry A. Spigel, 2647 Connecticut Ave., Washington, D. C.

Secretary-Treasurer: Dr. Perry W. Gard, 2520 Woodley Rd., Washington, D. C.

Place: Medical Society Bldg., 1718 M St. N. W. Time: 8 p. m., fourth Thursday of every month.

Memphis Pediatric Society

President: W. L. Rucks, 1074 Madison Ave., Memphis, Tenn.

Secretary-Treasurer: Dr. Harry Jacobson, 1193 Madison Ave., Memphis, Tenn.

Milwaukee Pediatric Society

President: Dr. M. G. Peterman, 411 E. Mason St., Milwaukee 2.

Secretary-Treasurer: Dr. B. J. Malnekoff, 3213 N. Marietta Ave., Milwaukee.

Place: Milwaukee Children's Hospital. Time: Second Wednesday in February, April, June, October and December.

New York Academy of Medicine, Section of Pediatrics

Chairman: Dr. Alfred E. Fischer, 73 E. 90th St., New York.

Secretary: Dr. Robert O. Du Bois, 122 E. 76th St., New York.

Place: New York Academy of Medicine, 2 E. 103d St. Time: Second Thursday of each month from October to May, inclusive, 8:30 p. m.

Northern California Pediatric Society

President: Dr. John Mott Rector, 2000 Van Ness Ave., San Francisco.

Secretary: Dr. George Bates, 490 Post St., San Francisco 2.

Time: Four times yearly.

Oklahoma City Pediatric Society

President: Dr. William M. Taylor, 625½ N. W. 10th St., Oklahoma City.

Secretary: Dr. Jeane Shotstall, 625½ N. W. 10th St., Oklahoma City.

Place: Oklahoma Club. Time: Third Thursday of each month.

Philadelphia Pediatric Society

President: Dr. Ruth Hartley Weaver, 1719 Rittenhouse St., Philadelphia.

Secretary: Dr. Sherman Little, 1740 Bainbridge St., Philadelphia 46.

Place: College of Physicians, 19 S. 22d St. Time: 8:30 p. m., second Tuesday in October, December, February and May.

Pittsburgh Pediatric Society

President: Dr. Elwood Stitzel, 403 Central Trust Bldg., Altoona, Pa.

Secretary-Treasurer: Dr. C. J. Stoecklein, Medical Arts Bldg., Pittsburgh 13.

Place: Pittsburgh Academy of Medicine. Time: Second Friday, alternate month from October to June, inclusive.

Richmond Pediatric Society

President: Dr. T. Stanley Meade, 913 Floyd Av Richmond, Va.

Secretary-Treasurer: Dr. Edwin L. Kendig Jr., 828 Franklin St., Richmond 20, Va.

Place: Richmond Academy of Medicine, 1200 E. C St. Time: 8 p. m., third Thursday of each mon except June, July and August)

Rochester Pediatric Society

President: Dr. William L. Bradford, 260 Crittend Blvd., Rochester 7, N. Y.

Secretary-Treasurer: Dr. Donald D. Posson, 222 Cl Ave., Rochester 11, N. Y.

Place: Rochester Academy of Medicine or arrangeme by program committee. Time: Third Friday of ea month from October to May.

St. Louis Pediatric Society

President: Dr. Peter G. Danis, 634 N. Grand Av St. Louis 3.

Secretary-Treasurer: Dr. H. Ewing Wachter, 37 Washington Ave., St. Louis 8.

Place: Branscome Hotel. Time: 7:00 p. m., thi Thursday of each month from November to June.

Seattle Pediatric Society

President: Dr. Frederick B. Joy, Stimson Bldg., Seatt

Secretary: Dr. Sherod M. Billington, Medical Dent Bldg., Seattle.

Place: College Club. Time: Third Friday of ea month from September to June at 6:30 p. m.

Southwestern Pediatric Society

President: Dr. William Belford, 420 Walnut St., Sa Diego, Calif.

Secretary: Dr. Robert J. Dostal, 710 Wilshire Blvd Santa Monica, Calif.

Place: University Club of Los Angeles. Time: Firs Wednesday in January, March, May, September an November.

University of Michigan Pediatric and Infectious Disease Society

President: Dr. Park Bradshaw, Muskegon, Mich.

Secretary: Dr. Harry A. Towsley, University of Michigan, Department of Pediatrics and Communicable Diseases, Ann Arbor, Mich.

Westchester County Medical Society, Pediatrics Section (New York)

President: Dr. John B. Ahouse, 27 Ludlow St., Yonkers N. Y.

Secretary-Treasurer: Dr. Elvira Ostlund, 64 Highland Rd., Rye, N. Y.

Place: Hospitals of Westchester County. Time: Third Thursday in November, January, March and May.